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Metal Replacing Wood in the Air

Airplanes Now Virtually on a Manufacturing Basis
—Pictures Include Views of Methods of
Making Ford Planes

BY JOHN GOLDSTROM

THE first man-carrying airplanes were little more than motored kites—things of wood and fabric held together by glue and tacks and piano wire. Twenty-three years of development have evolved multi-motored all-metal machines, riveted and welded, weighing tons and carrying twenty sleeping berths through the air at a speed of two miles a minute.

These machines have already flown, day and night, over European airways. And on the drawing boards of such designers as Prof. Hugo Junkers and Dr. Edward Rumpler in Germany are all-metal monoplanes

designed to weigh from 35 to 100 tons and to fly from Berlin to New York without stop in a day and a half. The larger of these transoceanic air liners will have space for 100 passengers.

All-metal planes are in quantity production by Junkers in Europe and Ford in the United States. The Junkers' factories are turning them out in various sizes at the rate of more than 200 a year, and it has been announced that Ford has begun with a group of 75, some tri-motored but most of them single-engined. Airplane makers here and abroad are turning from

JOHN GOLDSTROM, the author, has specialized in aeronautical writing since 1919, when he was discharged from the army in the late war. In his air travels he has covered 40,000 miles in fourteen countries, and in last May and June he made a trip around the world by airplane, steamer and railroad. His background includes eight years in the steel mills of Pittsburgh, which he entered at the age of 13 years and where he learned the trade of machinist. The succeeding eight years were spent in newspaper work, part of the time in iron trade journalism. In the accompanying picture he is shown at the left in front of the wooden type of mail plane, a de Havilland military two-seater with single Liberty motor. His first flight was with Glenn H. Curtiss in 1909. In 1920 he flew with the first through shipment of trans-continental air mail from New York to San Francisco.



wood to metal, and the general trend of aircraft production is in that direction.

The metal-worker is replacing the wood-worker on a steadily increasing scale. Most of the builders who still use wood and fabric in wings and fuselage build around a body framework of metal; the metal propeller is replacing the wooden type which was universal until a few years ago.

The Junkers Corporation of America recently stated that of all the commercial planes in operation the world over at least 50 per cent were of the all-metal type originated by Professor Junkers. In 1925 these planes flew 3,000,914 miles and carried 93,234 passengers and 656 tons of freight. Figures for 1926 are expected to show an increase of at least 30 per cent.

The world's first news of an all-metal airplane came in war dispatches from France in 1916. Early stories

into action the following year. Describing the development of his idea, Professor Junkers said:

"I was then perfectly aware of the fact that the main end of airplane construction was to be found in a greatly diminished parasite resistance. Constructors had begun at the time to surround individual parts, exposed to the open current of air, with a flap or any sort of envelope in streamline form, to decrease the enormous loss of efficiency caused by such resistances.

"But this was not sufficient. The streamlining, or fairing, must be shaped as a hollow space producing a minimum drag with a maximum lift. This idea is the nucleus of the patent. In other words, the structural part of the airplane, as well as the power plant, crew and useful load, tanks and so on, must be located in the sustaining units, i.e., the wings.

"Airplanes of comparatively large dimensions afford in a particularly high degree the possibility of



THE fuselage of the Ford plane is made with 13 frames or bulkheads. These frames are first assembled as complete units in their respective jigs. After completion they are grouped together in the final assembly jigs.

Photograph shows the assembly of one of the forward bulkheads in its jig. The workman is using a "rivet squeezer." This tool is noiseless and, as its name implies, squeezes the end of the rivet shank,

thus forming a head. The squeezer is operated by compressed air and the workman's right hand thumb may be seen upon the air control valve release. At left holes are being driven preparatory for riveting.

of the Germans' "flying tanks" were received incredulously, but were soon confirmed by pilots of the Allies' air forces. They weighed slightly more than a ton and had a speed of 105 miles an hour. But it was soon found that their sheet-iron construction made them too heavy to compete with lighter and faster-climbing pursuit ships in combat, and they were used for attack on infantry and other ground forces. Their metal skins gave them a relatively high degree of protection against rifle and machine gun fire.

The commercial types developed soon after the war were made of duralumin, corrugated to afford additional strength. They appeared on European airways in 1919 and in the United States Air Mail Service the following year. Because of a defective fuel feed adjustment they were not successful over here at first. The Ford product now being introduced in the Air Mail Service was first designed by William B. Stout, aeronautical engineer of Detroit. It follows the basic idea of Junkers.

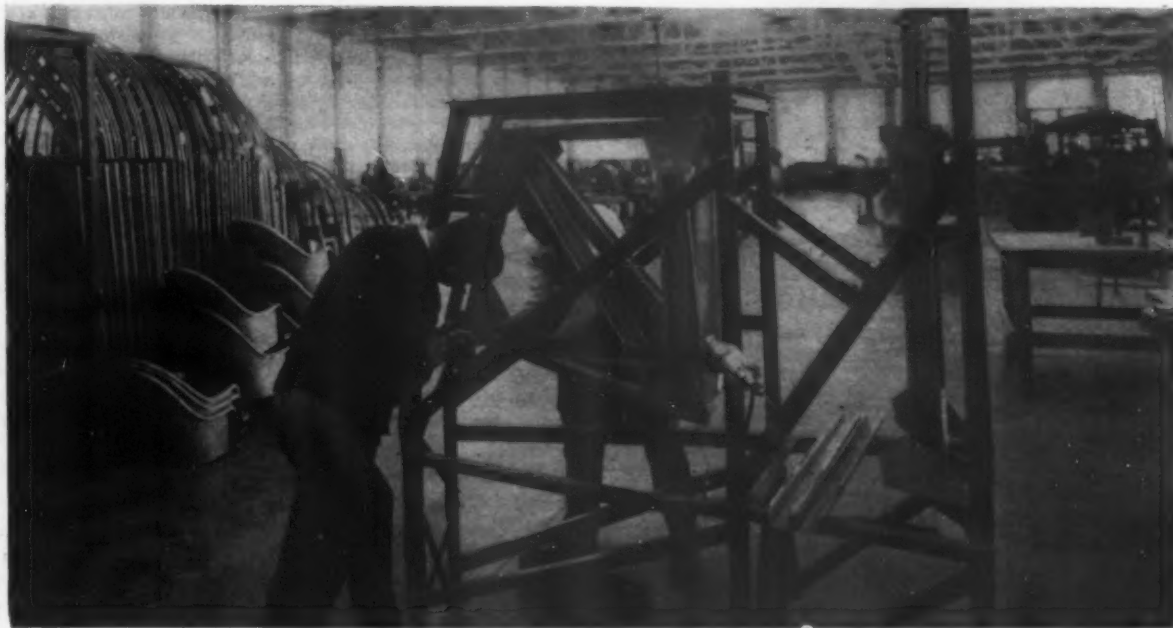
Professor Junkers, now 68 years old, in an address before the Royal Aeronautical Society in London, said that his first patent was granted in Germany in 1910, four years before the war. The first plane was built at the Junkers Werke at Dessau late in 1915 and went

carrying out the conception upon which the patent is based. It was in fact the creation of a swift and economical commercial giant airplane which I had in view as the ultimate object of the development. With such a craft the superior attributes of metal construction would become obvious in a most noteworthy degree.

"Among the advantages, the first is the greater durability. Wood is subject to the dangers of fire and decay, and it splinters when breaking; it bursts and warps from the effect of humidity and change of temperature, and the glued joints split; finally, it is attacked by insects. No wooden airplane, serviceable for any length of time in the tropics, has been produced. Metal is free from all such drawbacks.

"Structural parts made in wood also change shape and size; they swell or warp under the influence of heat and humidity, making necessary a continuous resetting and truing-up of the airplane. All this does not apply to metal, and a constancy of form is necessarily important in airplane wings, slight changes frequently producing a distinct deterioration of the aerodynamic qualities.

"Thus, metal airplanes have the advantage of greater durability, smaller expenditure for repairs and maintenance, and of preservation of form."



SECTIONS of the fuselage frame are assembled into small sub-assembly groups and they in turn are located on the fuselage frame assembly cradle.

Photograph shows the three

frames of the rear end of fuselage assembled as a unit. These sub-assembly groups are completely assembled in the jigs and are removed as a unit. The workman in front of jig is driving the rivet

with a pneumatic air hammer while the workman behind the jig is "bucking up." To the left may be seen a number of completed frames and seats ready for installation in the final frame assembly.

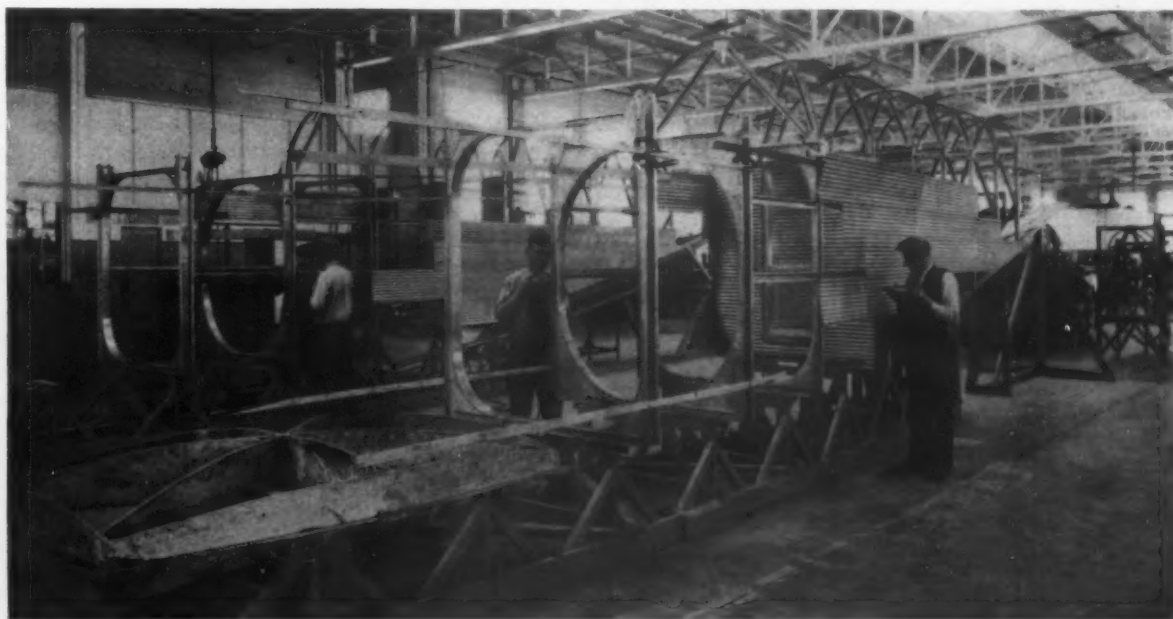
It is a matter of record that Junkers' planes have performed equally well in Central and South America and in Canada and Labrador, as well as in the temperate zone of the European airways.

The superiority of metal from the standpoint of the designer and constructor is cited by Professor Junkers as follows:

"The designer is less handicapped in the choice of dimensions and structural contours. Wood is obtain-

able only in fixed sizes and shapes of trunk and branch, furnished by nature, whereas metal may be obtained in a nearly unlimited variety of qualities and dimensions. We have sheet metal down to a thickness of 0.004 in., plates of more than 100 yards length, tubes, rolled section girders, etc.

"Shaping of wood is limited, while metal may be given nearly any form by pressing, forging, casting, rolling, drawing, or overlapping. And it is just as



FUSELAGE cradle provides for the assembly of frames together with the application of the skin covering. The frames are located in their respective places and trussed or braced together.

Man at right is drilling skin for rivets, while man at left is drilling frame for more structural members to be located.

In the foreground, a fixture may

be seen lying upon the cradle. This fixture is used to locate definitely the three main bulkheads upon which the wing is located. The bulkheads are not all shown in the picture.



workable as wood for turning, planing, milling, boring, filing and punching.

"Connections and joints, confined in the case of wood to glueing, bolting, mortising, and wrapping with fabric, all of limited reliability, are much more varied and dependable with metal; as, for example, welding—autogenous or electric—riveting, screwing, folding and soldering.

"Furthermore, the strength of metal is constant and can be stated any time in a reliable manner by tests, whereas the properties of wood are liable to change, wood being altogether unhomogeneous. Thus, the safety margin to be kept with wooden construction must be much higher without giving a sufficient guarantee against undesirable surprises.

"The result is that the application of modern methods of manufacture, such as mass production, interchangeability, standardization, and wide application of machine work, according to my opinion, can only be fully made use of in metal construction, and the unreliable wood must be avoided even in the building of large single airplanes, where the consequence of a crash can be disastrous both from the point of view of human lives and cost."

Comparing monoplanes with biplanes, Professor Junkers declares that "the ratio of height to span is undoubtedly best with the monoplane; the strength being equal, the latter is the lighter, and in addition has the advantage of having a large hollow space. Con-



SPECIAL rolls take an entire width of skin after corrugating in the press.

The rolls are used whenever it becomes necessary to form or shape a piece of corrugated skin to fit over a curved section. By exerting pressure up or down on the sheet, the operator is able to control the degrees of curvature desired. The picture shows a section of skin with reverse curvature.

sequently I came to the conclusion that the cantilever monoplane is to be preferred to the normal multiplane plane type in every respect."

All Junkers' planes since the first war plane (now in the German Museum at Munich) have been made of duralumin (95 per cent aluminum, 4 per cent copper, and 0.5 per cent each of magnesium and manganese). This light alloy, invented in 1909 by H. Wilms and patented by the Duerener Metallwerke, has a specific gravity of 2.8 or one-third that of mild steel, with the tensile strength of that material. Practical methods of applying duralumin to the construction of airplanes were developed in the Dessau laboratories, a recent statement from which says that "despite the higher (than wood) specific gravity of duralumin, by a proper use of its qualities and by careful detail design it has been possible to reduce the weight of Junkers' machines to below that of other machines—whether of wood or of metal—of a similar capacity designed for similar service."

In surplus war stocks of spruce and hickory there has been an economic reason, in countries other than Germany, for the continuance of the use of wood in airplane manufacture. These stocks are rapidly being diminished, and it is likely that before the end of the present decade nearly all airplanes, especially the commercial types, will be all-metal.

I was told at the Tempelhofer Airdrome that German aviators wept when, compelled by the Armistice terms, they put the torch to thousands of wood-and-fabric airplanes, many of them new. They were to learn that this wholesale destruction of war material, soon obsolescent, was a disguised blessing. An apparent economic loss became an actual advantage in the development of German commercial aviation when it eventuated in the design and construction of advanced types.

Germany, forbidden to have military aviation, concentrated on the development of civil air transport, with the result that the Lufthansa commercial airways extend westward to London, north to the Scandinavian countries, south to the Alps and east to Moscow. Next spring, Deruluft, a German-Russian combination, will extend its line from Moscow across Siberia to Peking. Trial trips have already been made and ground organization is under way.

A large portion of American, British and French post-war air casualties, both in military and in civil aviation, has been traced to the use of worn-out surplus war planes. Recent statistics place the German safety percentage at 99.997.

According to the 1926 Aircraft Year Book of the

EACH wing has three main spars or beams. The spars are constructed as a bridge or roof truss. The upper and lower chords of the truss are tied together with vertical and diagonal members, completing the truss.

Photograph shows the assembly of a spar chord. The chord is an assembly of a horse-shoe shaped outer member with a channel sectioned member riveted inside along its lower edges, thus making a stiff closed section.

The workman is shown riveting the two members together and using the "rivet squeezer," described in connection with another picture.

ONE set of special rolls is used only for forming skin to be used at leading edge of wing. This section is known as the nose former piece.

The forming is done slowly and gradually. The operator guides the sheet with his right hand and brings pressure to bear upon the sheet with his left hand, through the lever. Each nose former section has a gradual decreasing contour due to the taper of the wing both in plan and in front elevation. It is also for this reason that the rolls are made tapered.

Aeronautical Chamber of Commerce of America, from 1921 to 1925, inclusive, 354 persons were killed and 554 injured in aircraft accidents in the United States. Until the Air Commerce Act of 1926 was passed by Congress, there was no government regulation or inspection of aircraft.

Most of the planes still being flown by the air mail pilots on the transcontinental route are converted military planes of the De Haviland wood-and-fabric two-seater type. They have, in the process of conversion, been strengthened and otherwise improved. This, with excellent piloting and good ground organization, accounts for the fact that only two pilots were killed for more than 2,200,000 miles flown in the fiscal year, 1926.

The new Ford trimotored plane which recently made a trial trip over the Chicago-Dallas air mail route, operated by National Air Transport, Inc., is made of metal throughout—mostly duralumin—and carries a payload of 2500 lb. The weight of the plane when empty is 5400 lb.; its wingspread is 58 ft., and its three 200-hp. Wright radial motors give it a cruising speed of 95 miles an hour and a maximum speed of 120 miles an hour. It has a cruising radius of 500 miles without refueling and its cabin seats eight passengers. It has a special compartment for baggage, express freight and mail.

Nearly all of the private-contract routes are using new or comparatively new planes, and now that the Post Office Department is preparing to turn over the transcontinental route to private enterprise, a wholesale scrapping of obsolescent planes is expected.



Most of the pioneering in aviation has been done with wood-and-fabric planes; their many and varied accomplishments are a matter of record; but this type is giving way to the all-metal plane as surely and steadily as wooden ships and railroad cars have given way to metal ones. The greater initial expense of experimentation with metal has been a deterrent to some manufacturers, but the leadership of Junkers in Germany and Ford in the United States is paving the way to cheaper production.

Mass production of all-metal "flivver" planes is yet in the offing. First class all-metal transport planes at present cost from \$35,000 to \$100,000.

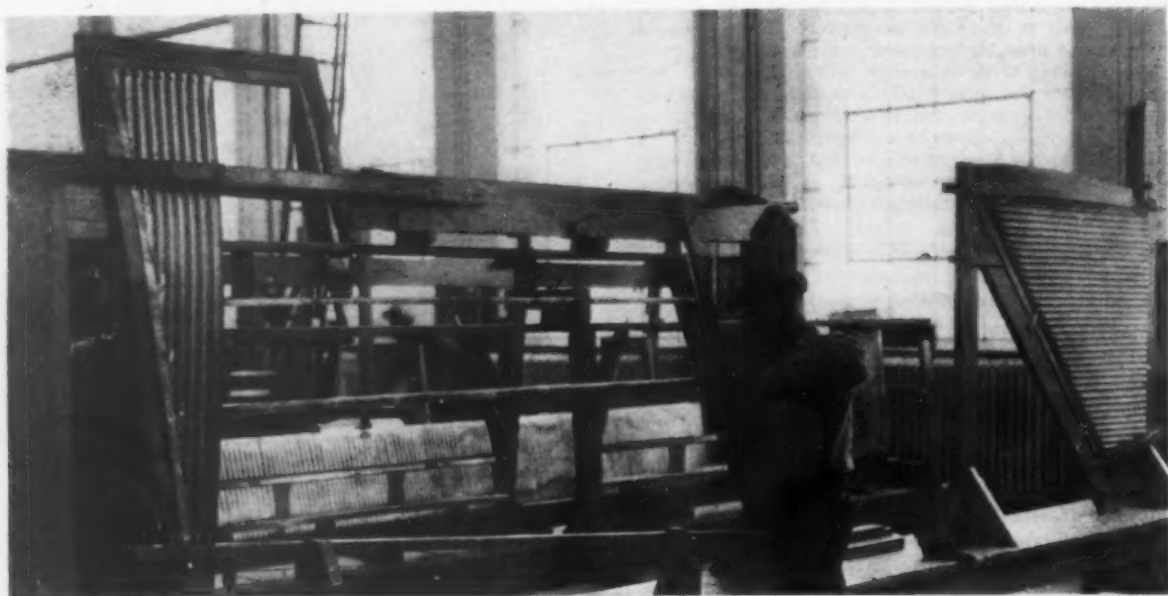
Aircraft development now is progressing so rapidly that a standard type of one year becomes obsolescent the next. This fact has deterred some manufacturers from entering upon quantity production, but the rapidly increasing demand for air transport here and abroad is beginning to result in larger output.

In addition to duralumin, a wide range of alloys and special steels go into the production of an all-



THE cockpit on this plane is equipped with winter enclosure. The enclosure is a duralumin framework containing movable glass panels. A hinged panel, opening outward, may be seen at top of frame. The man is shown driving skin rivets to the bulkhead or frame. The wing is shown in position on top of fuselage.

The forward bulkhead shows at each corner the fittings which connect the fuselage to the center engine mount. The rectangular hole at top of bulkhead is made to receive the instrument board. The two brackets with straps attached, directly under the hole are for support of the oil tank for the center engine. The two triangular boxes projecting forward of the bulkhead are housings for the rudder control stirrups, which are inside the cockpit.



THE man at the right is completing the assembly of the frame. The frame structure is assembled and riveted in the jig and all skin applied while yet in the jig. The rudder hinges may be seen on beam which is in line with top of man's head. When complete rudder weighs approximately 24 lb.

metal plane in its many and varied parts. The demand for lighter and stronger power plants has created a special field of aeronautical metallurgy. And countless thousands of tons of special metals go into the making of hangars, maintenance equipment, and field and airways lighting systems, to say nothing of airplane instruments and other accessories.

More than \$12,000,000 worth of aircraft and aircraft products were manufactured in the United States in 1925; figures for 1926 and 1927 will go far above this amount.

Following the aerodynamic experiments of Langley and Manly, and the glider experiments of Lilienthal and others, the first man-carrying and power-driven airplane was flown by the Wright brothers at Kitty Hawk, N. C., more than twenty-three years ago (Dec. 17, 1903). The development of mechanical flight lagged until the war demonstrated its practical utility. Since the war, or after the armistice, the principal countries of Europe have been demonstrating the practicability and dependability of aerial transport of passengers, freight and mail. At last, after eight years



THE plane is now equipped with center and wing motors and is also equipped with its landing gear. The motors used are the Wright Whirlwinds of 200 hp. each and weigh approximately 475 lb. each.

The forward bulkhead is now shown practically complete. The rear of the instrument board may be seen, also the oil tank, and one

of the rudder control stirrup housings has been removed, showing position of the control stirrups.

The man in center, on top of ladder, is lacing the leather pad at cockpit edge. The man at right is measuring opening in window frame sill for installation of window. In the background, half hidden by the fuselage, workmen may be seen who

are busy on installation of engine cowling. The cowling will be installed around all motors before the plane is completed and ready to leave the shop.

The plane pictured at the head of the article, on page 1753, shows this newest type of Ford all-metal plane. It is used over the Chicago-Dallas air mail route.

WITHOUT heat-treatment of duralumin, it would be impossible, says the Ford organization, to manufacture its all metal plane. "Duralumin in the annealed condition has comparatively little value as a stressed structural member. It can, however, be made into a strong member by proper heat-treatment.

"When properly heat-treated, duralumin may be cold worked for a number of hours. After several hours, the metal begins to harden and will continue this self-hardening process for about ten days, after which time it is practically at its maximum hardness. Therefore, it is necessary that all cold working be done within several hours after heat-treatment.

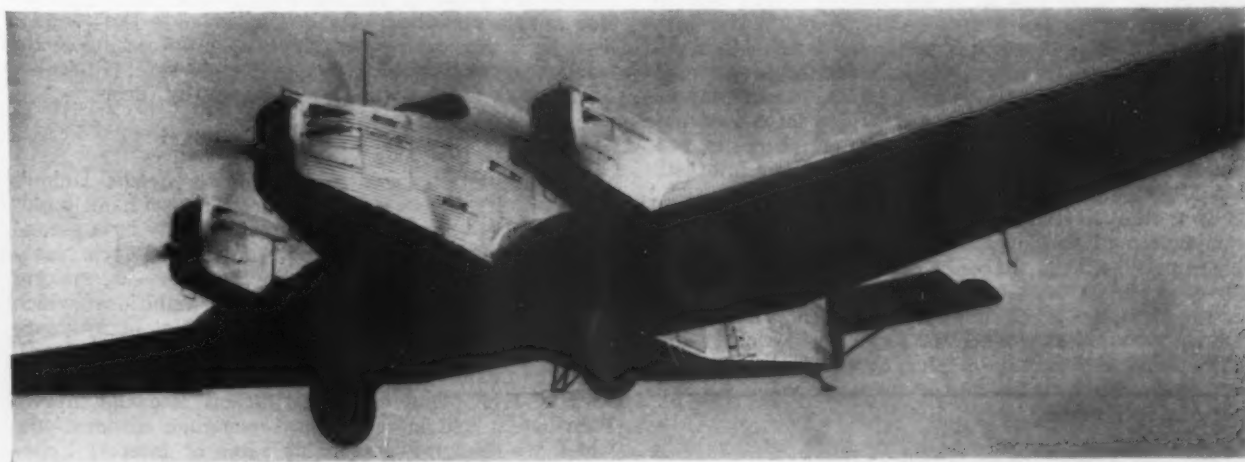
"The heat-treat solution consists of approximately equal parts of sodium nitrate and potassium nitrate held at a temperature of 940 to 960 deg. Fahr. After drawing from the heat-treat furnace, it is important that the metal be immediately quenched in clear running hot water, at or near boiling point. It may also be quenched in cold water, but the hot water will dissolve any layer of salts which may have adhered to the metal. This is particularly true when the metal is in the coiled condition, for the salt will deposit in thin layers between the coils."



of difficult and remarkable pioneering by the United States Air Mail Service, the country in which aviation was born is beginning a large-scale development of general air transport. In this development the metal industries are to play a leading part.

The most advanced type of airplane is now mostly a machine shop product. The term "flying machine" is becoming obsolete, but it is nevertheless a fact that the modern plane becomes more and more a machine that flies. More than 40,000 miles of airways travel

in fourteen countries has convinced me that it flies with a reasonable degree of safety. These journeys, which were in no case taken merely for adventure, have included the flight with the first through delivery of transcontinental air mail from New York to San Francisco, mostly through winter storms, and trips over the European airways east as far as Moscow and south to the Swiss Alps. Myself formerly a machinist, I prefer the flying machine to any other means of transportation.



Latest Type Junkers All-Metal Monoplane Carries 25 Passengers or 20 Sleeping Berths. Its weight fully loaded is 16,500 lb.; pay-load, 7700 lb. The three Junkers motors total 1000 hp. and give a speed of 110 miles per hour. The wingspread is 104 ft. and the length 70 ft.

Spanish Export Duty on Iron Ore Abolished

WASHINGTON, Dec. 21.—Effective Dec. 9, the export duty of 0.20 gold peseta (3.8c.) per ton on iron ore was abolished by the Spanish Government, according to a cablegram received by the Department of Commerce from Commercial Attaché C. H. Cunningham. At the same time the transport tax on iron ore was reduced by one-fifth.

Texas-Oklahoma Rates on Steel Pipe Held Unreasonable

WASHINGTON, Dec. 21.—Passing upon a complaint of the Lone Star Gas Co., the Interstate Commerce Commission, in an opinion last week, held that carload rates on iron or steel pipe and fittings between points in Texas and Oklahoma are unreasonable and should be established, effective Feb. 15, on the basis of the Memphis-Southwestern mileage scale.

First Year of Norton Co.'s Credit Union

Satisfactory Experience at Worcester with New Organization Which Loans to Employees, Pays Interest on Savings and Dividends on Investment

ALTHOUGH founded only a year ago, the Norton Credit Union, whose 800 member-shareholders are all employees of the Norton Co., Worcester, Mass., has proved an important adjunct of the works organization. It has extended financial assistance on a sound business basis to many of its members. It has paid its shareholders 6 per cent on the money invested by them, and those members who have taken advantage of its savings department have received interest compounded monthly on their deposits at the current savings bank rate. Finally, its influence has brought still closer the relations between executive officers and the workers.

Loans to 500 Out of 800 Members

The Credit Union's shareholders comprise close to one-third of the men and women on the Norton Co. Worcester payroll. In one year over 500 loans to members have been made, representing more than 300 individual borrowers, and totaling \$60,000. These accommodations have furnished money needed in the emergencies of family life—sickness, death, a new baby, a surgical operation, and the like. Loans have provided means of paying up long-standing, worrying debts, of laying in the winter coal supply bought at summer prices, and of building homes. Under the by-laws, money may never be loaned if it is not required for some actual need. No purchase of an automobile or of anything else which might be classed as unessential may figure in a loan transaction.

The Credit Union is strongly protected by statute. Massachusetts is exceedingly strict in its mutual savings bank laws, and these have been adapted to the Credit Union. A charter clearly sets forth the permitted scope of the particular organization. Investments of funds are carefully prescribed. A guarantee fund must be maintained. No loan may exceed 5 per cent of the total assets, which means in the Norton Union \$2,000 at the present time. Under the law, membership is confined to a particular group—to members of some organization, for instance, or people of a given race, or, as in the case in point, the employees of a certain company. The group idea is carried out specifically. To take an example, the employees of two separately owned plants could not unite their interests in a Massachusetts Credit Union.

Thus the Norton Credit Union must restrict its membership to employees of the company. No other person may hold the shares or borrow money or deposit money in the savings department. To become a member the employee must subscribe for at least one share of \$5 par value. He need not pay cash down for his holdings; his shares may be taken care of by installment payments. He may become a borrower when he has paid one full share.

Procedure in Getting a Loan

If a member wishes a loan he fills out a formal application form, setting forth the amount, and, which is all-important, to what use he will put the money. Then he must appear before the credit committee and present his case. This committee consists of the employment manager and two general foremen, all three intimately familiar with the Norton personnel. Granted that the purpose for which the money would be expended is satisfactory, the applicant's standing as a credit risk is scanned. If there is no blot on his financial escutcheon, if his wages have never been attached or assigned and he bears a good name morally and in financial matters, his application is considered favorably. The final decision lies with the credit committee and they make a weekly report to the board of directors. If the amount is large, indorsers or collateral

must be furnished. But if the member wants a sum of not more than \$50, or perhaps \$100, then he is granted the loan as a "character risk," with no other security than his name on a note. When the amount is more than \$100 and less than \$300 two indorsers, both members, are required. For larger sums there must be collateral in the form of mortgage, insurance policy, stocks or bonds, or the like. Always the borrower gives a demand and never a time note, and in it he agrees to make payments at stated intervals in liquidating his indebtedness. Most of the character risks are for \$50 or less, many of them for sums ranging from \$20 up to \$35 and \$40.

Loans for Coal Supply

The coal-buying loans are unique. The Credit Union, the borrower and the coal dealer cooperate in these transactions. A member of the Union orders his coal in the warm weather months, when the price presumably is lowest; he gets the bill and presents it to the credit committee, which has agreed to the loan. The Credit Union takes the member's note for the amount, the note is indorsed by the coal merchant, to whom the money is paid. The Credit Union is twice protected, for should anything happen to the borrower, the dealer would have to make good the amount. But the dealer feels safe enough, for the Credit Union has placed its stamp of approval upon the member by participating in the transaction. Then, too, instead of delivering coal a ton at a time during the rush of winter buying, the Credit Union business helps keep going the dealer's organization when trade is at its lowest. The custom started with one or two dealers. Now the other large coal firms of Worcester are seeking to get a share of the business.

Considering the class of loans, the Credit Union's interest rates are low. The borrower of an amount under \$50 pays \$1 for the accommodation, this being the simplest method. On larger amounts the common rate is 8 per cent, which is materially less than the same borrower would have to pay elsewhere, if he were fortunate enough to make a loan on any terms.

Financing Home Building

An important part of the Norton Credit Union's service to its members lies in money help in home building, first by a construction loan, and finally by a second mortgage loan. A considerable number of such transactions were carried through in the one year, making possible the fulfillment of family ambitions which otherwise might have been deferred. Not many years ago construction loans, for the raising of money with which to finance a house during its erection, were often very costly. Then came institutions like the Morris Plan banks, and later bankers' mortgage corporations, which by charging reasonable rates of interest lightened the burden for the owner of home property. The Credit Union is able to do still better for its members, for the flat 8 per cent without legal or service charge or appraisal fee works out a trifle lower than rates usually obtainable elsewhere.

The savings department of the Credit Union is conducted after the manner of the mutual savings bank. The same 4½ per cent annual rate of interest is paid as by the banks of Worcester, but interest is credited monthly instead of quarterly, which makes the return somewhat more attractive. Withdrawals may be made at any time. Likewise, the shareholder who desires to relinquish his holdings finds it an easy matter, for the Credit Union is always ready to convert his shares into cash. The investment is a liquid one.

An analysis of memberships of the Norton Credit Union shows that the largest element is made up of

men with families. There are many women. The unmarried younger people naturally are not so easily interested, but there are indications, it is said, that the influence of the large membership distributed through the departments is already having its effect among those upon whom the financial future still rests lightly.

The Norton Co. exercises no control over the Credit Union. An office is furnished in connection with the employment department and the company gives the

service of a clerk gratis. There is a cashier's cage, where payments on shares and on loans are made. The company does no collecting of money; there is no deduction from pay envelopes. The members do their business with the Credit Union just as they do with a bank. The company has nothing to say in the selection of officers or about details of management. Officers are elected and all policies determined by the stockholders and board of directors.

FLYWHEEL FOR MILL MOTOR

Determination of Proper Characteristics to Fit Given Conditions

Discussing speed control in relation to modern rolling mill drives, L. Rothera, speaking before the West of Scotland Iron and Steel Institute some months ago, gave a means of determining when a flywheel would pay for itself. His paper in part read as follows:

"It is possible to liberate the stored energy in a flywheel only by producing a speed drop. Under ordinary rolling conditions the drop in speed is approximately proportional to the demand for power at any particular instant. In the case of most variable speed sets this fall in speed is automatically produced by an inherent characteristic of the set, and no appreciable loss in efficiency results.

"In the case of a constant speed drive, with a three-phase motor, the fall in speed is produced by insertion of external resistance in the rotor circuit. While giving a speed drop proportional to the load, this dissipates in the form of heat, an amount of power practically proportional to the drop in speed.

Characteristics of Flywheel Case

"This introduces interesting considerations as to the correct relationship between the flywheel weight to be adopted and the fall in speed to be allowed in any particular case. The variables to be considered are, on the one hand, capital cost; on the other, running cost. The former is determined by the weight of the wheel and the cost of the slip resistance; the latter, by the friction losses in the flywheel bearings and the heat losses in the slip resistance.

"To show the incidence of these various factors, an

example has been worked out as shown in Figs. 1 and 2. The case considered is that of a sheet mill with a driving motor of 1000 hp. at 150 r.p.m. The flywheel connected to the rolls runs at 32 r.p.m. Overload on the motor under working conditions has been limited to 65 per cent. The time of the metal in the rolls has been taken as one-sixth of the total rolling time.

"In Fig. 1 is plotted the weight of flywheel required to limit the horsepower demand from the motor to the above mentioned figure, against the corresponding slip. Also against the slip is plotted the power loss due to the bearing friction and the external resistance.

"In Fig. 2 the flywheel curve has been plotted against the annual charge on the capital cost, plus the annual charge of the slip resistance. The power loss curve has been redrawn, to show the expenditure on purchased power.

Reading the Answer from the Curves

"By combination, these two curves give a third (upper) curve which by its shape indicates clearly the percentage slip and weight of wheel to be adopted to give the lowest charge per annum. From the present case it will be seen that, under the conditions specified, the slip would be 17 per cent at full load and the weight of flywheel would be 90 tons.

"It is easy to see from this curve the effect of varying cost of power or weight of wheel. A reduced cost in power would make it economical to use a larger slip. A decreased cost of wheel would, on the other hand, reduce the slip. If, again, the metal was in the rolls a greater length of time, the slip would be reduced and the weight of the wheel increased. Steadiness of running also enters into this problem, as it may be desirable to limit this for best rolling conditions."

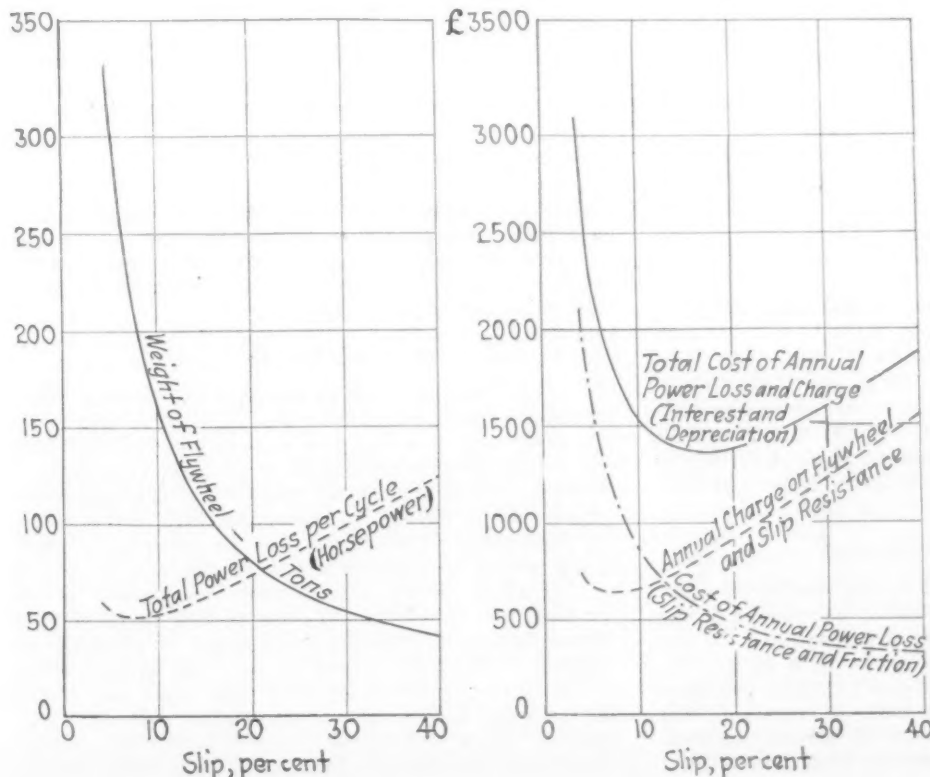


Fig. 1 (Left) Shows the Weight of Flywheel Required to Limit Demand on Motor. The power loss in hp. represents slip resistance and friction. Fig. 2 (right) shows that, in the case studied, the slip would be 17 per cent at full load

Steel Corporation Stock Dividend

Bonus of 40 Per Cent Voted—First Change in Common Stock Since Organization—Capitalizes Part of Surplus

DIRECTORS of the United States Steel Corporation voted unanimously on Dec. 16 to issue a 40 per cent stock dividend to the 86,000 shareholders of the common stock of the corporation. This is the first change which has been made in the common stock since the organization of the corporation in 1901, when a total of \$508,302,500 of such stock was issued in the form of 5,083,025 shares of \$100 par value each. Except for one major operation in 1903, when \$150,000,000 of preferred stock was retired and a similar amount of bonds of the corporation issued in replacement, this is the only change in the capital stock structure which the corporation has ever made.

While the present arrangement remains to be ratified at the annual meeting of the stockholders next April, it is generally conceded that ratification will be merely a matter of form, and that the action, as taken by the directors, will be duly approved.

Changes in Total Capitalization

When the corporation was first formed it had a total capitalization, including capital stock and bonded debt, of \$1,383,319,500. This consisted of the \$508,302,500 of common stock already mentioned, \$510,281,100 of preferred stock, \$303,757,000 of corporation bonds and \$60,978,900 of bonds of subsidiary companies. In 1903 the preferred stock was reduced to \$360,281,100, at which point it stands today. Consequently, since 1903, the total outstanding capital stock of the corporation has stood without change at \$868,583,600. Addition of \$203,321,000 of common stock will raise this figure to \$1,071,904,600. Except for the American Telephone & Telegraph Co., this represents the largest stock issue of any concern in the United States, if not in the world.

Changes in the outstanding volume of bonds have been recorded, year after year, through the operation of the sinking fund on the one hand and the frequent issuance of small amounts of bonds for various purposes on the other. Thus, while the outstanding bonds of the corporation, after the change in 1903, stood at \$451,221,500, there was a gradual increase to a maximum of \$480,199,000 at the end of 1907, and a steady but slightly variable reduction since that time to a total of \$350,926,000 at the end of 1925. This reduction in 18 years has amounted to almost \$130,000,000 of capitalization written off by the corporation through the retirement of its bonds.

Meantime bonds of subsidiary companies have shown an irregular career. The \$60,000,000, roughly, of 1901 and 1902, gave place to \$99,779,177 in 1903, after which there was an irregular upward trend, culminating in 1912 in an amount aggregating \$189,161,672. During this period there were four jumps of more than \$12,000,000 per year in each case, two of them being about \$28,000,000 each. Since 1912, however, there has been an irregular reduction in the outstanding amount of bonds of subsidiary companies, until at the end of 1924 the amount stood at \$149,926,930. An increase in 1925 brought the total to \$158,553,578.

Total Capital Investment

Measured in outstanding stocks and bonds, the total capital obligations of the corporation were lower at the end of 1925 than at the time of organization. An aggregate of \$1,383,319,500 had given place to \$1,378,063,178. Meantime, however, there had been considerable changes in the total, involved, of course, in the changes in the outstanding issues of bonded indebtedness. The maximum was reached in 1912, with a total

of \$1,511,682,272. Assuming a reduction of \$10,000,000 in the outstanding bonds of the corporation this year, which is in conformity with the changes which have been taking place during the past several years, the total capital structure upon issuing the new stock will aggregate about \$1,572,000,000.

Effect Upon Surplus

Some of the large built-up surplus of the company will be transformed into the new stock by the operation just undertaken. That surplus has undergone great changes since the beginning. At the organization of the company a sum of \$25,000,000 was provided. At the end of the first year of operation (nine months after the organization) the amount was \$43,620,940. Two years later this had passed \$90,000,000, only to drop at the end of 1904 to \$60,772,731.

Again it started an upward climb, reaching \$148,736,491 at the end of 1907 and dropping in the year of recession, which followed, to \$105,079,477. An irregular upward tendency brought the figure to \$179,464,846 at Dec. 31, 1915. The next year saw an addition of more than \$200,000,000, while a further \$100,000,000 in 1917 resulted in the huge total of \$488,866,353. Thence there was an irregular upward climb to a maximum of \$553,399,408 at the end of 1923, while the total surplus after dividends at the end of 1925 stood at \$546,863,109.

Earnings this year have added to the surplus, although, without knowledge of the full amount of charges, it is not possible to give the figures. For the first quarter a surplus of \$10,874,745 was reported; for the second quarter, \$12,448,330; for the third quarter, \$16,509,693.

Capital per Ton of Capacity

It is interesting to note the relation between the capital structure of this organization and its capacity to produce steel. At the time of organization the steel ingot capacity was estimated at 9,425,000 gross tons. On this basis the total capital structure represented \$147 for each ton of ingot capacity. At the end of 1914, when a new set of conditions was developing, the capital structure represented only \$78 for each ton of ingot capacity, the annual capacity at that time being estimated at 19,188,400 tons.

With the 1925 capitalization the corporation's estimated ingot capacity of 22,750,000 tons has back of it a capital structure of less than \$61 per ton. Under the new arrangement, however, with the added common stock, the same capacity would be represented by about \$69 of capital structure per ton.

Value of Common Stock

It has long been recognized that the common stock of the corporation had adequate property behind it. In the early days, however, this was not generally believed. At no time during 1903, 1904 or the first 11 months of 1905 did the common stock sell for as high as \$40 per share. From the end of September, 1903, until the end of September, 1904, there were no sales of common stock which reached as much as \$20 per share. In six of those twelve months there were sales at \$10 or less, the lowest having been at 8½ in May, 1904. These figures represented the general belief of the investing public with regard to the value of that stock.

Even the preferred stock in those days was selling at far below par, in spite of its regular 7 per cent dividends. A low of 49¼ was reached in November, 1903, and at no time between the end of July, 1903, and the

end of September, 1904, did the preferred stock of the corporation reach as much as \$75.

Recent history is well impressed in the minds of all interested. Common stock of the corporation passed \$160 per share last week—the highest point it has ever reached—while preferred stock was hovering around \$130 per share. \$160 per share on the present issue would represent about \$114 on the enlarged issue.

In this connection it may be noted that the book value of the common stock has ranged from \$121 in 1902 to a maximum of \$281 in 1925. The early figure advanced irregularly to \$156 in 1909, dropping to \$139 in 1911, and since then has gone up steadily. The \$200 mark was passed first in 1917, when the book value stood at \$222.

High Cost of Present Improvements

Despite the declining capital obligations of the past quarter century, for each ton of ingot capacity of the corporation, it must be noted that it costs far more to build a furnace of given capacity today than it did in

the early days of the corporation. If the capital structure had followed along the basis of costs of construction with regard to equipment owned, the \$147 of 1901 per ton of capacity might easily have reached \$400 per ton of capacity today. Cost of construction of all elements entering into a steel mill has advanced far more than the cost of general commodities, while the other elements of the cost of making steel have gone down. This is a part of the process of replacing men with machinery, resulting in a lowering of the wage bill per ton of steel, with a corresponding increase in the fixed capital charges.

The conservatism which has characterized the management from the first has extended to all phases of the financial operations, including the fixing of the dividend rate from time to time and the accumulation of a large surplus. Whether this surplus, a portion of which is now being transferred into capital account, will receive the same rate of dividends as has been paid recently on the current common stock is a question for the future to determine.

NOVEMBER SHEET BUSINESS LOW

Shipments for Eleven Months Indicate a New Record for Year

Independent sheet steel manufacturers lost ground last month in sales, production and shipments. Sales were equal to only 57.8 per cent of the capacity of the mills reporting to the National Association of Sheet and Tin Plate Manufacturers and they represent all except approximately 2 per cent of the independent capacity of the country. Sales called for 68.3 per cent in October and 140.3 per cent in September, which was the biggest month in the history of the industry.

Production last month was 86.9 per cent of capacity, compared with 101.4 per cent in October and 96.2 per cent in September. Shipments represented 82.0 per cent of capacity compared with 97.2 per cent the month before and 94.3 per cent in September. Sales fell 26,794 tons in November as compared with October, production fell 36,143 tons and shipments, 38,677 tons. Against a reported decrease of 81,873 tons in the unfilled orders for the month is an apparent loss of 77,562 tons, the excess of the shipments over the sales during November.

As a picture of the sheet steel industry for this year, it is interesting to note that the total shipments

for the 11 months ended Nov. 30 were 3,174,516 tons, or only 19,356 tons below the total for all of 1925. Shipments rather than sales and production tell the real story of actual business. Another interesting feature of a compilation of the monthly reports of the Sheet and Tin Plate Association is that production, which totaled 3,209,107 tons for the 11 months was only 34,591 tons in excess of shipments, while for all of 1925, there was an excess of production over shipments of 328,113 tons. Shipments will make a new high record this year by a considerable margin.

Figures for November make the following comparison with those of the two preceding months and the same month last year:

	1926			1925
	Nov.	Oct.	Sept.	Nov.
Total number of mills	712	710	710	714
Capacity per month...	433,700	420,300	432,650	416,000
Per cent reporting....	73.8	73.8	73.8	74.9
Sales	185,235	212,029	448,147	370,361
Production	278,455	314,598	307,459	336,021
Shipments	262,797	301,474	302,198	294,660
Unfilled orders.....	500,120	581,993	731,977	636,570
Unshipped stocks....	124,185	100,448	99,911	107,177
Unsold stocks.....	40,929	40,758	34,511	36,105

Percentages to Capacity			
Sales	57.8	68.3	140.3
Production	86.9	101.4	96.2
Shipments	82.0	97.2	94.3
Unfilled orders.....	156.0	187.6	229.2
Unshipped stocks....	38.7	32.2	31.3
Unsold stocks.....	12.8	13.1	10.8

Ninety Per Cent of Machine Tool Exposition Space Taken

Ninety per cent of the space has been taken and the space charge has been reduced from \$1.50 to \$1.25 per square foot for the exposition next year in Cleveland of the National Machine Tool Builders Association. The reservations have come from 101 members of the association and 39 non-members and accessory concerns. General Manager E. F. DuBrul says there are 29 others who have not given definite amounts to reserve and, as there are only 25 booths still available, when these are spoken for, the space will be completely sold out.

The general plan provides for aisles 10 and 20 ft. wide, with open areas around the entrance for registration, rest spaces, etc. The booth blocks on the floor are 30 ft. through, giving booth depths of 15 ft. in this area. Wall booths run all around the hall, their depth being 10 ft. They are laid off with 10, 15 and 20 ft. frontages. The available booth area is 58,250 sq. ft. Of this 52,000 sq. ft. are already taken.

The industry has responded so well in space reservations, Mr. DuBrul says, that it will not be necessary to charge \$1.50 per sq. ft., the figure at which the guarantees were asked of the members on the minimum of 20,000 ft. necessary to insure the exposition's success.

The committee therefore has made a flat rate of \$1.25 for all booth area. No preference charge will be made for corners, two aisle exposures or any other locations that usually carry an extra charge. The lottery method of allotment gives all an equal chance at such spaces.

Westinghouse President Looks for Continued Prosperity

E. M. Herr, president Westinghouse Electric & Mfg. Co., is looking for the present period of prosperity to continue well into the new year. In a review of the electrical industry, which he says has had a good, but not an unusual year, he points out in connection with general business that there are several factors which should exert a favorable influence during the coming year. The financial condition of the country is excellent, and during 1927 there will be either a reduction in income taxes or a substantial reduction in the war debt of the country. The railroads in the past year have been able to better the five-year record for efficiency made in 1925, and Mr. Herr thinks they will do even better in 1927, especially if they are relieved of some of the restrictive laws which hamper freedom of movement and the initiation of broad executive policies.

NEW TURRET LATHE TOOLS

Increased Output and Better Quality Claimed for Single and Multiple Cutter Turners

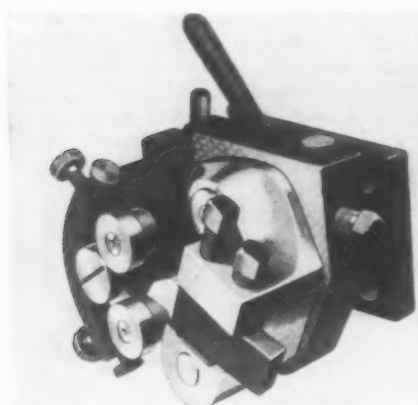
Two new bar tools, one a single cutter turner and the other a multiple cutter turner, have been announced by the Warner & Swasey Co., Cleveland.

The single cutter turner, shown at the left in the accompanying illustrations, is for the turning of single diameters on bar work. Rigid construction of the tool is said to assure the maintenance of correct diameters for heavy, as well as for light cuts. The cutter is carried in a cutter block which swings about a hardened and ground stud, the cutter itself being held in an open slot by two screws. This permits turning very close to shoulders, collets, or a fixture, and it may also be set to precede or follow the rolls of the roller back rest. The cutter block may be adjusted conveniently for use in varying diameters and is quickly withdrawn after having taken a cut, to prevent the marring of

body to prevent springing. The cutters are clamped between the tool body and the top plate by the screws bearing on their tops, this method of clamping being stressed as permitting of turning close to shoulders, the collet or a fixture, and as having the minimum of overhang.

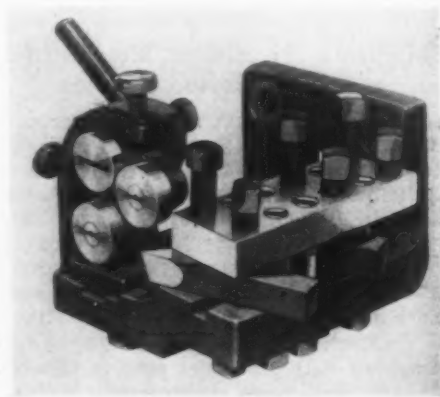
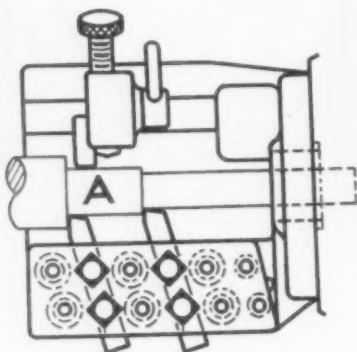
The rolls on the back rest are adjustable for varying diameters, while the back rest holder itself is adjustable longitudinally on the body. One back rest holder with rolls is furnished with each turner. If necessary, two back rest holders, each with two rolls, may be used. The ability of this tool to accommodate two roll carriers at different positions, together with the heavy construction of the tool itself, is said to make the use of multiple cuts practical for accurate work. The accompanying line sketch shows the application of this tool to the turning of multiple cuts, the roller riding on diameter A, and following the cutter. Two rollers are used when two diameters, that are turned simultaneously must be held to close limits and accuracy and the two diameters must also be concentric.

Long stock, smaller in diameter than the turret



Single Cutter Turner. After the cut, the cutter can be backed away to prevent marring of a finished diameter

Application of the Multiple Turner Is Shown in Sketch Below. The roller rides on diameter A and follows the cutter



Multiple Cutter Turner. Two or more diameters may be turned and concentricity between the diameters is maintained

the work. The adjusting screw is also locked securely by a binder screw.

Two rolls are provided on a roller back rest, a feature claimed to reduce friction and permit of higher speeds, and allowing the rolls to ride on the work is stressed as leaving a much better finish. The roller back rest rolls and studs are of hardened steel and are mounted on sturdy swing jaws. The rolls are adjusted to the work by screws and are clamped in position by a binder handle. A hole in the body of the tool permits long stock, smaller in diameter than turret hole, to be run through it and also through the turret.

Economies Claimed for Multiple Cutter Turner

The multiple cutter turner is designed to permit of increased production through "multiple cuts" without disturbing the accuracy of the finished work and without excessive set-up time. The taking of two or more accurate finishing cuts at once reduces the time necessary for the two cuts to the time necessary for the longest cut.

The tool consists of three parts, the body, the top plate and the roll carrier. The body serves as a support for mounting the top plate and one or two roll carriers in different positions. The top plate is held in position by bolts inserted from the bottom of the tool body and spacer bushings are provided between the bottom of the tool and the top plate to prevent the latter from springing.

The cutters are plain bits which can be set conveniently in various combinations. The top plate has screws for holding the cutters in different positions, and spacer bushings are provided between it and the

hole, may be run through the turret when desired, through a hole provided in the main body of the tool. For quantity lot work, single-purpose cutter blocks for holding the cutters may be substituted for the standard blocks. These blocks are located by a tongue which fits into the groove in the tool body. The cutter slots and set screw holes are located to suit the requirements of the particular job in hand.

Improvement in November Reported for Ohio Foundries

Employment in Ohio foundries and machine shops showed an increase of 6.4 per cent in November compared with the same month in 1925, according to the monthly bulletin of the Bureau of Business Research of Ohio State University. The number of wage earners also increased slightly over October, the index number for November standing at 95.1 whereas the previous month it was 94.9. These figures were compiled from reports made by 63 firms, and in computing the statistics, an average month in 1923 was taken as 100.

The number of electric hoists ordered in November increased 24.5 per cent over the number ordered in October, according to records of the Electric Hoist Manufacturers Association. The increase in the value of the hoists over that of October was 1.65 per cent. Shipments were less in November than in October by 17.7 per cent.

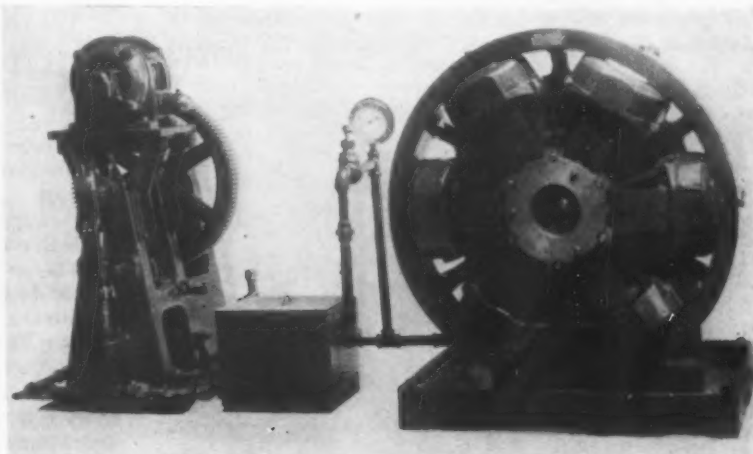
Hydraulic Machine for Forcing Pipe on Gudgeons Carrying Shaft Ends

Hydraulic equipment designed for compressing the ends of wrought iron pipe on to cast iron end pieces or gudgeons carrying shaft ends is shown in the accompanying illustration. The pipe on which the gudgeons have been pressed is used as rolls for printing presses, in the case of one manufacturer, and as rolls for mangles or power ironing machines, in the case of a manufacturer of laundry machinery. The pipe is of various diameters from 2½ to 12 in. and up to 12 ft. in length.

The compressing is done cold, which is pointed out as saving the cost of the fuel formerly required for heating the pipes preliminary to shrinking them on to the end pieces. The work, in being done in a minute or two for each compression, is stressed as effecting marked savings in time as compared with the previous method of heating and shrinking.

The machine is a recent addition to the line of the West Tire Setter Co., Rochester, N. Y., and in a general way the machine employs the principles of the company's hydraulic tire setter, previously built, for setting steel tires cold on wagon and carriage wheels. The pipe machine, however, is set up on edge

so that the pipe can be handled in a horizontal position. It consists of a series of hydraulic rams set around the interior of a heavy steel ring, mounted on a suitable base, to which the rams are slidably connected so they may move in radially toward the center as pressure is built up in the several cylinders. Blocks or dies used in front of the several rams permit of adapting the



machine to pipe of various diameters. A multiple-cylinder pump furnishes the necessary pressure.

Dust Filter With Vibrator for Dislodging Dust

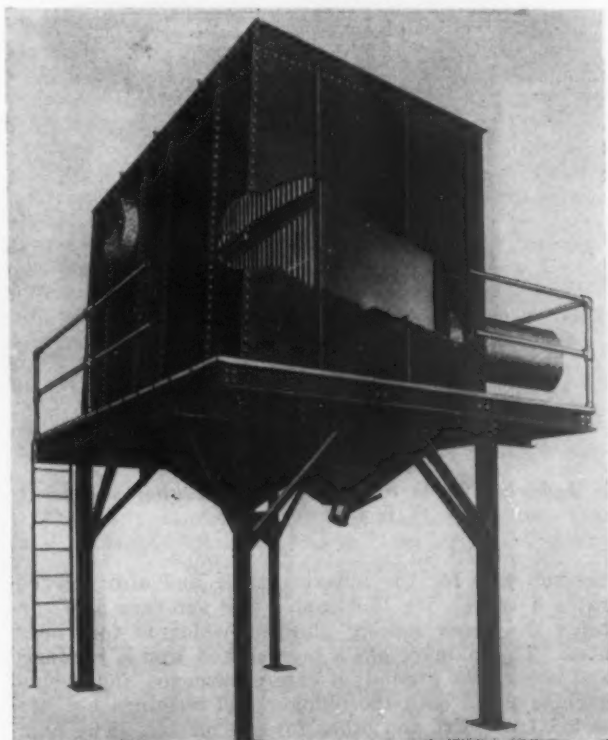
A dust filter equipped with a gyratory vibrator, which dislodges dust adhering to the filter fabric, is a new product of the Whiting Corporation, Harvey, Ill.

The filter consists of a steel housing divided into two compartments by an assembly of wooden frames which are covered with filter fabric. The dust-laden air enters the incoming compartment where it is directed against a baffle. Expansion of the air reduces its velocity, allowing the heavier particles to fall by gravity into a hopper. The fine float dust is carried

against the filter fabric from which it can be dislodged when necessary by the gyratory vibrator.

Each filter frame is individually mounted and separately sealed in the housing so that it may be removed for repairs without disturbing adjacent frames. In order to eliminate severe wear at the point where the cloth is chafed against the frame by the breathing effect of the screen the filter frames are heavily padded so that the fabric is held a short distance away from the wood members of the frame. A dust discharge valve is mounted at the base of the hopper. It is of the cone-poppet type, sealed on a flexible rubber ring which engages the outside of the lower portion of the cone. When the valve operating lever is released the cone valve seats by gravity on the flexible rubber ring.

The filter vibrating mechanism is made up of a steel vibrator bar, one end of which is bolted to the filter frame. This bar is attached to a steel casting which has an integral stub shaft, mounted in a self-aligning ball-bearing. The outer race of the bearing is clamped rigidly in a rotating housing which is provided with an eccentric weight located immediately over the center of the ball-bearing. A shaft from the housing connects with the driving motor through a flexible coupling. The vibrator housing is rotated at high speed and the shake imparted to the screen by the gyratory vibrator is said not to be a severe shock, but a rapid, sharp shake of sufficient intensity to free dust from the filter fabric.



The Filter Vibrating Mechanism Is Motor Operated. It serves to dislodge the dust adhering to the filter fabric

Oxygen and Acetylene Plants to be Erected in Russia

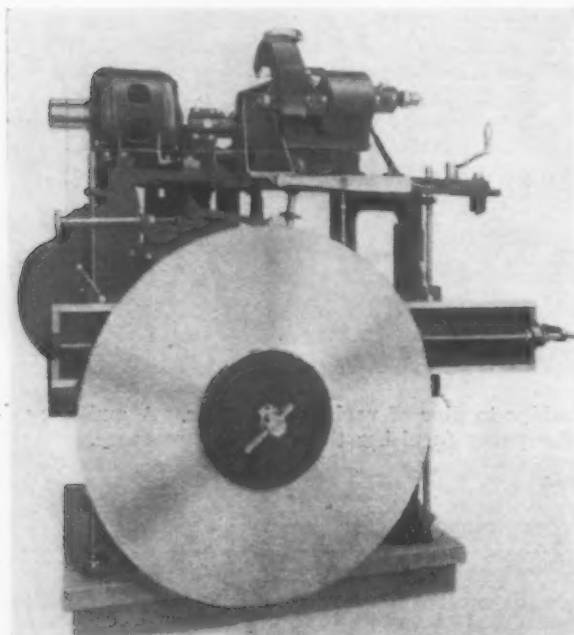
Preparations are under way for the erection of a large oxygen, acetylene and welding plant by the International Oxygen Co., Newark, N. J., at Baku, in Russia, according to information received by the Amtorg Trading Co., 165 Broadway, New York.

The International company is said to have a concession for the construction and operation of a number of such plants throughout the Soviet Union, the first of which has been completed in Moscow and will open in January. It is also stated that for the purposes of the concession the International company has established a partnership with the Soviet Metal Syndicate, and operates under the name of the Russian-American Compressed Gas Co.

AUTOMATIC SAW GRINDER

Index Feed Provided to Assure Uniform Spacing and Grinding of Teeth

Simplicity of design and ample power are general features stressed in connection with a new automatic grinder for hot and cold metal cutting saws, which is being placed on the market by the Machinery Co. of America, Big Rapids, Mich. The machine, the capacity



The Capacity Is for Grinding Hot and Cold Metal Cutting Saws Ranging from 36 to 84 In. in Diameter

of which is for saws from 36 to 84-in. in diameter, is adapted for grinding heavy saws such as employed in steel plants and structural shops.

The index feed to assure uniformity in spacing and grinding the teeth is a feature. One index will serve for different saws varying in size provided the saws have the same number of teeth and the variation in diameter does not exceed 15 in. For each change in number of teeth, an additional index plate would be required.

The machines can also be equipped for feeding direct from the saw teeth, instead of from an index plate. In this case adjustment can be made for a wide variety in sizes of saws and number and shape of teeth without requiring extra plates or other equipment. This is said to be feasible, however, only where the saw teeth are not too much worn or damaged before re-sharpening to cause unevenness in the feed.

The general arrangement of the machine, which is designated as the No. 146, may be noted from the accompanying illustration. Two motors are employed, one of 5-hp., for driving the machine, and another of 1-hp., for raising and lowering the cross bar or rail on which the saw blade is mounted. The saws are held in place by an adjustable cone on the 2½-in. cross-head pin. Massive construction is followed and large double bearings are provided for the principal working parts of the machine. The camshaft assembly which actuates the feeding mechanism has three bearings.

The feeding of the saw and the movements of the grinding wheel are controlled by two cams, one of which, through the feed arm, serves to feed and space the saw tooth by tooth. The other cam operates the lift arm and controls the action of the grinding head, bringing the grinding wheel in contact with each tooth as it is fed into the grinding position. By varying the size, shape and timing of these cams, and changing the feeding and grinding mechanism adjustments, saw teeth of a variety of shapes can be ground. Each revolution of the feed cam feeds one tooth of the saw

into position with the face of the tooth in line with the grinding wheel. The lift cam at the same time makes one revolution to maintain the grinding wheel in correct grinding contact with the saw tooth. The camshaft assembly which actuates the feeding mechanism has three bearings. It is inclosed in a housing to protect the working parts from dust and grit, and this housing is located at the side of the machine to permit of convenient access and adjustment.

The feed of the saws is direct and positive, the feed arm being designed so that it is in uniform balance at all points of its travel and has no side strain even when feeding the heaviest saws. The lever principle employed is said to provide power and accuracy, the large heavy feed arm being pivoted so that a leverage is provided in feeding the saw to an exact grinding position. Adjustment of the feeding movement to a wide range of saws and spacings of teeth is made conveniently by changing the throw of the feed cam.

The grinding wheel contact with the saw is controlled by a separate cam on the camshaft. This cam actuates a lift arm in the center of the machine supporting the grinding head by a double-forked connection which is pivoted on the lift arm. By adjustment of the fork to and from the pivoting point, longer or shorter movement of the grinding head is provided to accommodate varying depth of saw teeth.

Standard Indexing Table for Use on Drilling Machines

The Hoefer Mfg. Co., Inc., Freeport, Ill., has added to its line a standard type of indexing table and base which when used with an auxiliary head permits of employing single-spindle drilling machines for several operations at one time. It is stated that with this equipment loading can take place in one position, drilling a group of holes in another, counterboring these in perhaps another, while other operations such as hollow milling, tapping, spot-facing, threading, reaming or countersinking can be done in others.

A large base is provided for the indexing unit. Mounted on this base is the top plate which becomes



Indexing Table and Base. The locking plunger is foot operated

the sub-base for the indexing table and also incorporates a trough for lubricant. The sub-base also contains the index locking plunger, which is foot operated. This plunger has a tapered end, and is hardened and accurately ground; it enters hardened and ground bushings, and both the plunger and bushings are protected from dirt and other foreign matter. The number of tapered bushings in the table depends upon the number of stations the work requires. These bushings are accurately spaced around the under side of the in-

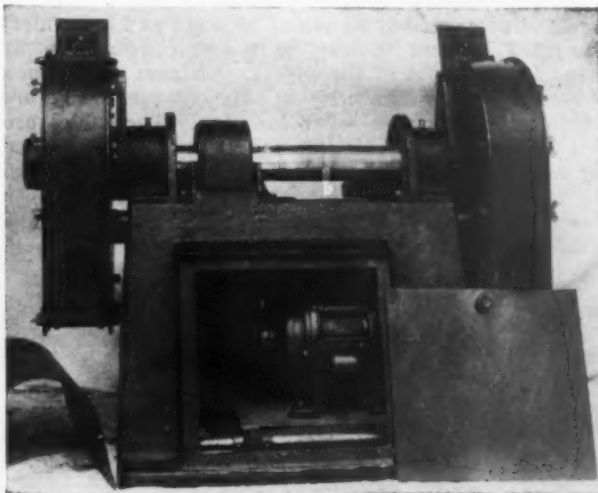
dexing table to assure correct registration of the table in all positions.

The indexing table itself is a plain flat finished surface, to which any number of different fixtures may be attached. This table is carried by a large central locating stud and is held down by a collar on the lower end of the stud, permitting adjustment to compensate for wear. The table rests on roller bearings spaced around the top of the sub-base. Turning of the table is accomplished with little effort on the part of the operator, which is stressed as permitting him to apply himself entirely to production operations.

Floor Grinders with Motor in the Base

A new line of grinding machines, designated as the RW. type and available in several sizes, has been placed on the market by the Ransom Mfg. Co., Oshkosh, Wis.

The machine is driven by motor mounted in the base, as shown in the accompanying illustration, and motors of a variety of types can be furnished. The drive from



The Motor Bracket May Be Raised and Lowered by Means of the Screw on the Front of the Machine

the motor is by belt to the spindle, which is unusually large and is mounted in SKF ball bearings. Spindle speeds may be varied by changing the pulley on the motor or on the spindle. The belt is tightened by means of a screw on the front of the machine, which screw serves to raise and lower the hinged bracket upon which the motor is mounted.

The rest brackets are removable to permit of grinding large castings while held on the operator's knee, and these brackets may be adjusted up and down to facilitate the grinding of different size castings. The machine is equipped with fabricated steel guards which conform to standard safety codes. This type of machine is also furnished for operating rubber bond wheels at periphery speed of 9000 to 10,000 ft. per min.

Small Kerosene Engines Finding Favor in China

There is a constantly growing market in China for small kerosene engines for use in farm irrigation work, according to Trade Commissioner G. C. Howard, Shanghai, in a report to the Department of Commerce. Machinery importers are paying more and more attention to this type of engine which is standard, easily handled, and is becoming more and more saleable.

An interesting feature in connection with the use of kerosene engines on the farms in China has recently been developed. In many districts the farmers have mounted small engines of this type which are used to operate pumps on barges. These are moved along the canals from farm to farm and pump water for the individual farmers at an agreed price.

Self-Contained Universal Tool-Room Grinder

Direct-connected motor drive, with the complete elimination of belts, is an outstanding feature of a new No. 3 universal tool-room grinder which is being brought out by the Oesterlein Machine Co., Cincinnati. The capacity and design of the new machine are identical with the company's belt-driven No. 3 and the belt-and-motor-driven No. 2 grinders.

The 1-hp. motor used to drive the wheel-head, transmits power through a flexible coupling, intermediate gears and spiral gearing to the spindle. The intermediate gears provide two wheel speeds. The wheel-head motor is mounted on the column and the entire unit may be swiveled 90 deg. in either direction.

The machine is equipped with automatic power feed and water supply. The pump, power feed and work-head, are driven by an inclosed motor at the rear of the machine. Three work-head speeds are provided, with power transmitted from the gear box through a flexible shaft, worm and worm wheel to the work-head spindle. Power for the automatic table feed is from the geared feed box, through a telescoping universal joint shaft to the table feed mechanism in the knee. The pump is direct-driven by gear from the end of the motor armature shaft.

In addition to the three rates of automatic table feed, three means of hand reciprocation of the table



The Wheel-Head Motor Is on the Column. The work-head, power feed and pump motor is at the rear

are provided. These consist of a high- and low-ratio table feed by means of a handwheel and a lever feed that is used for quick, short-stroke table reciprocation.

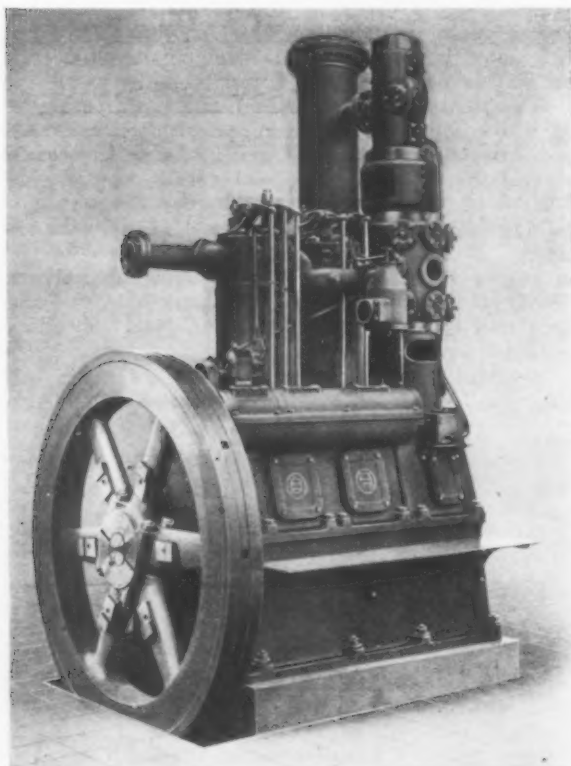
Welded Shapes in Machine Design

Replacing castings by welded structural shapes in machine design is to be discussed at a meeting of the metropolitan section of the American Society of Mechanical Engineers, on Tuesday evening, Jan. 4, 1927, at the Engineering Societies Building, New York, by W. L. Warner, industrial engineering department, General Electric Co. At the same meeting a discussion is scheduled on the design of dished heads for pressure vessels. The speakers announced are S. W. Miller and A. B. Kinzell, Union Carbide and Carbon Research Laboratories, Inc., and H. E. Rockefeller and T. W. Greene, Linde Air Products Co.

Gas Engine Driven Air Compressor

The Chicago Pneumatic Tool Co., 6 East Forty-fourth Street, New York, is marketing a new line of vertical four-stroke cycle gas-engine driven air compressors of standard air pressure for commercial purposes, and high pressure two-stage compression for the flowing of oil wells.

The machines are designated as the type V-CTG and V-CTGZ, respectively. The latter machine, of special design for the flowing of oil wells, utilizes the design of the Moteren Jerke Mannheim Benz engine in all its



Four-Stroke Cycle Gas-Engine Driven Air Compressor

details with substitution of gas heads and ignition system in place of the standard Diesel heads. The design is said to be unique in that, if at any time gas supply becomes exhausted, Diesel engine heads can be substituted for the gas heads and the unit becomes a full Diesel solid-injection engine unit. The air compressor is of the company's standard type, with the Simplate valve.

Wholesale Prices Still Dropping

November showed a further step in the practically steady decline in wholesale prices as reported by the United States Bureau of Labor Statistics. The present figure is 148.1, based on an average of 100 in 1913. This shows a drop of more than 1 per cent from the 149.7 of October and is the lowest figure recorded since July, 1924. One year ago the level was 157.7. If December shows about the same level as November, the average for the year will be approximately 151, compared with 158.5 in 1925 and 150 in 1924.

Metals and metal products continue to hold the lowest position of the eight great groups represented. Metals in November were at 126.5, compared with 126.7 in October and with 129.8 in November last year. Metals have been consistently lower than the average of other materials ever since the end of 1917. In not a single month during the past nine years have the metals been as high as the general average.

Fuels at 190.2, representing a sharp advance from the 184.4 of October, are highest of all the groups. Building materials at 174, and clothing materials at 169.9, come next. Foods are slightly above the average of all commodities, while farm products are below the general level.

To Build Ore Railroad in Utah

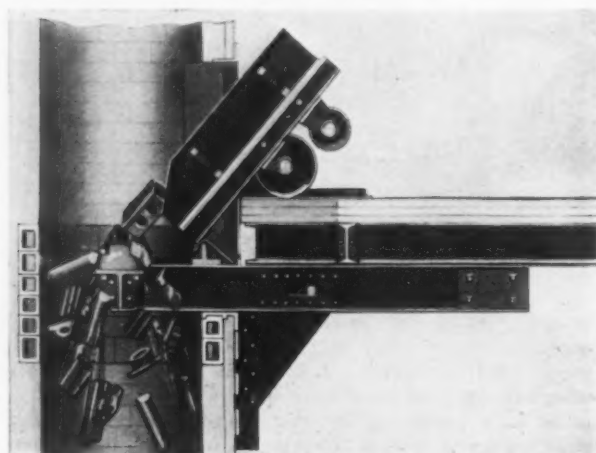
SAN FRANCISCO, Dec. 18.—The Iron Mountain Railroad Co., of Utah, a subsidiary of the Columbia Steel Corporation of this city, has filed articles of incorporation and is planning to build 12 miles of railroad from Iron Springs, Utah, a station on the Union Pacific's Los Angeles-Salt Lake line, to a new iron ore field. The new branch is expected to provide transportation of the products of the Iron Mountain mines, one of the Columbia Steel Corporation's most important holdings, and will open up for settlement a new territory that has never been inhabited.

Balanced Cupola Charger

A balanced cupola charger which is claimed to assure uniform distribution of iron and coke from the level of the cupola bed up to within one foot of the charging door has been placed on the market by the Whiting Corporation, Harvey, Ill.

The charger is made of a cast-iron distributing block bolted to one end of a steel I-beam which projects into the cupola as shown in the illustration. This I-beam is supported at its center by a pin and is counter-weighted so that it may be moved conveniently by hand into and out of the cupola. Charges of iron and coke are carried separately in balanced cars which are equipped with Hyatt roller bearings. Turntables are not required inasmuch as the loaded cars can be turned by one man. A steel plate charging floor is required.

The charging car is loaded so that the rear of the car is only a few pounds heavier than the front. The balanced beam can be rotated by hand into the cupola



The Balanced Beam Can Be Rotated by Hand Into the Cupola

and the car is dumped by lifting the rear end. When dumped the larger wheels of the car strike the bumpers which are secured to the run-way at the cupola door. The charging door cannot be lowered until the distributing beam has been swung into the vertical position. The balanced charger is applicable to either old or new cupolas of 45-in. or larger inside diameter.

November Employment Held Well in Illinois

The Illinois Department of Labor reports that employment in the metal industries of Illinois fell off 1.3 per cent during the month of November. This decline, as compared with October of this year, has not, however, reduced employment to a low point. This drop is in contrast with a gain of 0.7 per cent in November, 1925, and about the same amount in November, 1924. Despite the recent curtailment, it was the best November since 1923. Average weekly earnings of factory workers in November, 1926, showed the best November weekly average since the industrial surveys were started five years ago.

European Steel Prices Decline

Higher Franc Curtails French Exports—Markets Quiet as Holidays Approach—
Czechoslovakia, Hungary and Austria Join Cartel

(By Cable)

LONDON, ENGLAND, Dec. 20.

FUEL is cheaper but still is about 6s. per ton more than the pre-strike price. Pig iron is slack as the holidays approach. No. 3 Cleveland has been sold for first quarter at £4 7s. 6d. (\$21.21) per ton, and prompt shipment iron is quoted at £4 15s. (\$23.03) per ton. About 20 Northeastern furnaces are in blast but only one is actually producing hematite, which is consequently scarce and commanding up to £4 12s. 6d. (\$22.43) per ton for first quarter. Foreign ore continues quiet.

Finished steel makers are well sold on tonnage for domestic shipbuilders, and are asking up to £9 for ship plates, although this figure is rather exceptional. Some

heavy plate mills have resumed, but plants using foreign steel are hampered by irregular supplies of semi-finished.

Tin plate is quiet with little business. Galvanized sheets continue inactive and black sheets are idle.

Continental markets are quiet. There is fair export inquiry but little business, and domestic consumers are awaiting the holidays before entering into fresh commitments.

The European Raw Steel Cartel now includes Czechoslovakian, Hungarian and Austrian interests.

With a joint quota of 2,000,000 tons, German delegates to the European Rail Makers' Association have signed the agreement, and the association is definitely formed.

FRENCH EXPORT TRADE POOR

Rise in Value of Franc and Competition Promise Lower Prices

PARIS, FRANCE, Dec. 3.—Business is becoming more and more limited, and there is an increasing realization among sellers that lower prices must come before long. In the meantime the franc continues strong, with a slight tendency to advance in foreign exchange. Another factor tending to produce lower prices is the decline in certain costs of production, not including wages, which continue high. Fuel prices also show no downward tendency.

Since the rise in value of the franc, export business has been more difficult to obtain, and in addition most members of the International Steel Cartel are offering considerable tonnages for export. As a whole, the present situation is not promising, and there is little prospect of an early improvement in business conditions.

Pig Iron.—There were 217 furnaces in blast on Nov. 1. The October production of pig iron totaled 815,694 metric tons, of which 609,927 tons was basic and 147,255 tons foundry. The total output shows an increase from

September of about 30,000 metric tons, largely in the production of basic for the steel plants. Demand for foundry iron continues satisfactory but small, despite the considerable reduction in consumers' stocks. Export of pig iron continues active and prices firm.

Semi-Finished Material.—Prices are fairly firm both in the domestic and export markets, but the loss of the heavy British trade, enjoyed during the coal strike, is being felt. German sellers of semi-finished steel are quiet. Current quotations for export range from £4 12s. 6d. (\$22.43) per ton on large blooms to £4 17s. (\$23.52) per ton on small sizes. Billets are not particularly strong at £5 4s. to £5 7s. (\$25.22 to \$25.94) per ton, f.o.b. Antwerp.

Finished Material.—Export demand for beams has declined and prices are slightly lower at £5 10s. per metric ton (1.20c. per lb.), f.o.b. Antwerp. Many sales, however, are reported at £5 11s. 6d. to £5 12s. per ton (1.22c. to 1.23c. per lb.). Bars, meeting the competition of German exporters, are quoted at £5 15s. per ton (1.27c. per lb.), but actual transactions are made at lower and more competitive prices. One sale is reported to have been closed at about £5 10s. per ton (1.20c. per lb.). The agreement of French, German and Belgian producers of wire rods to maintain prices at £6 2s. 6d. per ton (1.33c. per lb.), an advance of 5s.,

British and Continental European prices per gross ton, except where otherwise stated, f.o.b. makers' works, with American equivalent figured at \$4.85 per £ as follows:

Durham coke, f.o.b.	£1 5s.		\$6.06	
Bilbao Rubio ore	1 2		5.33	
Cleveland No. 1 fdy.				
(nom.)	4 7½	to £5 0½s.	21.21	to \$24.37*
Cleveland No. 3 fdy.	4 5	to 4 15	20.61	to 23.03*
Cleveland No. 4 fdy.	4 4	to 5 14	20.36	to 22.79*
Cleveland No. 4 forge	4 3½	to 4 12½	20.12	to 22.43*
Cleveland basic				
(nom.)	3 15	to 3 15½	18.18	to 18.30
East Coast mixed	4 10	to 4 12½	21.82	to 22.42
East Coast hematite	4 8	to 4 12½	21.34	to 22.43
Rails, 60 lb. and up	7 15	to 8 0	37.58	to 38.80
Billets	7 10	to 8 15	36.37	to 42.43
Ferromanganese	16 0		77.60	
Ferromanganese				
(export)	15 15		76.38	
Sheet and tin plate				
bars, Welsh	6 15	to 7 10	32.73	to 36.37
Tin plate, base box.	1 0½	to 1 2½	5.03	to 5.46
Black sheets, Japanese specifications	15 5	to 15 15	74.11	to 76.53
			C. per Lb.	
Ship plates	7 15	to 8 5	1.67	to 1.78
Boiler plates	10 15	to 11 5	2.32	to 2.43
Tees	8 12½	to 9 2½	1.86	to 1.97
Channels	7 17½	to 8 7½	1.70	to 1.81
Beams	7 12½	to 8 2½	1.65	to 1.76
Round bars, ¾ to 3 in.	8 5	to 8 15	1.79	to 1.89
Steel hoops	10 10	and 11 0	2.28	and 2.39
Black sheets, 24 gage	12 10	to 12 15	2.70	to 2.76
Galv. sheets, 24 gage	16 10	to 17 0	3.56	to 3.68
Cold rolled steel				
strip, 20 gage, nom.	18 0		3.91	

*Export price, 6d. (12c.) per ton higher.

†Ex-ship, Tees, nominal.

Continental Prices, All F.O.B. Channel Ports

(Per Metric Ton)			
Foundry pig iron (a)			
Belgium	£3 17½s.	to £4 0s.	\$18.66 to \$19.40
France	3 17½	to 4 0	18.66 to 19.40
Luxembourg	3 17½	to 4 0	18.66 to 19.40
Basic pig iron:			
Belgium	3 14	to 3 15	17.94 to 18.18
France	3 14	to 3 15	17.94 to 18.18
Luxembourg	3 14	to 3 15	17.94 to 18.18
Coke	0 18		4.37
Billets:			
Belgium	5 2½	to 5 5	24.85 to 25.46
France	5 2½	to 5 5	24.85 to 25.46
Merchant bars:			C. per Lb.
Belgium	5 10	to 6 0	1.21 to 1.32
Luxembourg	5 10	to 6 0	1.21 to 1.32
France	5 10	to 6 0	1.21 to 1.32
Joists (beams):			
Belgium	5 11	to 5 15	1.22 to 1.26
Luxembourg	5 11	to 5 15	1.22 to 1.26
France	5 11	to 5 15	1.22 to 1.26
Angles:			
Belgium	5 15		1.26
½-in. plates:			
Belgium (nominal)	7 0	to 7 2½	1.54 to 1.56
Germany (nominal)	7 0	to 7 2½	1.54 to 1.56
¾-in. ship plates:			
Belgium	6 7½	to 6 12½	1.40 to 1.44
Luxembourg	6 7½	to 6 12½	1.40 to 1.44
Sheets, heavy:			
Belgium	6 3	to 6 4	1.33 to 1.34
Germany	6 3	to 6 4	1.33 to 1.34

(a) Nominal.

is being closely adhered to, but has resulted in a curtailment of buying. The export market on sheets is strong, with a considerable demand for heavy gages, and the price firm at £6 7s. 6d. per ton (1.40c. per lb.), f.o.b. Antwerp. Medium and light gage sheets are less active and concessions are obtainable.

GERMANS DEFEND IMPORTS

May Claim Price Here Should Be Compared With World Market Prices

NEW YORK, Dec. 21.—Export buying continues small, partly as a result of the approach of the new year. Importers of foreign steel are inactive, except for a few small sales of structural material and bars by sellers dealing with French or Belgian mills. Importers of German steel are inclined to await the result of expected action by the Treasury Department under the anti-dumping act. Recipients of notices on shipments claimed by the Government to be in violation of the anti-dumping act are awaiting an official decision, which will probably result in a public hearing.

Should a hearing be held, importers will apparently claim that much of the steel being brought in from Germany is made to American specifications and not being salable in the country of origin, there is no domestic market. Corrugated reinforcing bars serve as one illustration. Although manufactured for the American market they are not used in Europe and might be construed as coming under Section 205 of the anti-dumping act, which says in part:

That for the purpose of this title the foreign market value of imported merchandise shall be the price, at the time of exportation of such merchandise to the United States, at which such or similar merchandise is sold or freely offered for sale to all purchasers in the principal markets of the country from which exported, in the usual wholesale quantities and in the ordinary course of trade for home consumption (or, if not sold or offered for sale for home consumption, then for exportation to countries other than the United States), plus, when not included in such price, the cost of all containers and coverings and all other costs, charges, and expenses incident to placing the merchandise in condition packed ready for shipment to the United States, except that in the case of merchandise purchased or agreed to be purchased by the person by whom or for whose account the merchandise is imported, prior to the time of exportation, the foreign market value shall be ascertained as of the date of such purchase or agreement to purchase.

It is pointed out by sellers of German steel that the world market, or export, price of German mills on corrugated bars is the same to other countries as to the United States, so that, basing the question of dumping on the export price of this product as sold to other consuming markets, rather than on an arbitrary domestic price, which does not exist, no dumping is involved. This claim, however, even though sustained by the Government on bars, would not necessarily apply to some other products, which are sold in Germany substantially as in the United States, except for the use of the metric measurement on German domestic sales.

Thus far, all anti-dumping notices have been served against imports of steel from Germany, except in an occasional instance where Belgian steel was furnished by a German mill, the invoice giving the impression that the shipment was German in origin.

The case reported last week of an importer fined on a tonnage of German special steel brought into Baltimore did not involve the anti-dumping act. In declaring the value, the importer had deducted a small percentage representing commission and the Government claimed that this should have been included, as it appeared on the original invoice.

Further claims of importers of German steel are that German prices in this country are on an equal basis with, or slightly higher in some instances than, the selling prices of French, Belgian and Luxemburg mills, which do not enter into the present discussion of dumping.

Export business is quiet with the exception of a small amount of prospective business in railroad material from Japanese municipalities. Bids will be

opened in Tokio, Dec. 25, on 1½ miles of 91-lb. girder rails. On Dec. 20, Osaka municipality opened bids on 3 miles of 100-lb. high T-rails, and on Dec. 24, Nagoya municipality will open bids on one mile of 93-lb. and one mile of 108-lb. grooved rails. About 14,000 base boxes of tin plate for the Kioto Oil Co. in Japan is reported to have been placed with two Japanese export houses for execution by mills in the United States.

BELGIAN PRICES WEAK

Steel Prices Decline As Mills Seek Tonnage—Cartel May Reduce Production Quota

ANTWERP, BELGIUM, Dec. 4.—Prices are substantially unchanged, but the tendency of the market is downward, and any desirable tonnages would doubtless bring out concessions. The present dullness of business is attributed in part to the usual year end quiet, but a large factor is undoubtedly the heavy quota being permitted by the International Steel Cartel. In some quarters, it seems to be expected that, rather than permit a severe decline in the price level, the cartel will announce a curtailment of production, but the future course of prices is so indefinite that action to curtail output may be delayed. It is believed that the time required for British plants to resume, now that the coal strike is ended, may govern the action of the cartel. In the meantime, however, there is an increasing number of mills seeking tonnages and competition for the little business appearing in the market is severe. As a result, buyers are inclined to delay as long as possible, in expectation of further reductions in quotations. In addition to the high cost of raw materials and wages, mills are being forced to take into consideration the recent proposal to readjust freight rates to a gold basis, which would temporarily increase the rates about 40 per cent.

Pig Iron.—Available iron for prompt shipment is small and prices are fairly firm. Domestic buying of foundry iron is good, and export prices continue firm at £4 5s. (\$20.61) per ton, f.o.b. Antwerp. In a few instances prompt shipment foundry iron has been sold for export at £4 7s. to £4 9s. (\$21.09 to \$21.58) per ton, Antwerp. Demand from British consumers has dropped to a low level, with certain British furnaces booking backlogs of iron for January delivery at concessions in price.

Semi-Finished Material.—Buying has declined considerably as a result of the British strike settlement, but available stocks are small and prices fairly firm. Buyers, however, in expectation of lower quotations, are delaying purchases as long as possible. Billets, ranging in size up to 2½-in., are quoted at £5 6s. to £5 8s. (\$25.70 to \$26.19) per ton, with sizes of 2½ to 4 in. at £5 4s. to £5 6s. (\$25.22 to \$25.70) per ton, f.o.b. Antwerp. Blooms are scarce but prices vary, depending upon the sizes specified. Heavy blooms are quoted at £4 12s. 6d. (\$22.43) and 4 to 8 in. range from £4 17s. to £4 17s. 6d. (\$23.52 to \$23.64) per ton, f.o.b. Antwerp.

Finished Material.—On most products prices are nominal, there being an insufficient number of desirable tonnages in the market to bring out the large concessions that might be obtained. Several makers are reported to have made decided reductions in their original quotations to secure orders. On export business bars are quoted at about £5 12s. 6d. (\$27.60) per ton. A few orders have been placed at £5 10s. to £5 11s. (1.20c. to 1.22c. per lb.). Beams are slightly lower, about £5 12s. per ton (1.23c. per lb.), but with French works quoting as low as £5 10s. per ton (1.20c. per lb.), but little tonnage is being taken at this price. Business in wire rods is small, as a result of the new price, representing an advance of 5s. per ton. Corrugated bars are offered at £6 to £6 2s. 6d. per ton (1.32c. to 1.33c. per lb.). Steel hoops continue on a basis of £6 15s. per ton (1.48c. per lb.).

The Kennedy Valve Mfg. Co., Elmira, N. Y., has adopted a group insurance program which includes a visiting nurse service.

Cleveland Engineers to Maintain Continuous Equipment Exhibit

A continuous exhibit of engineering equipment and materials will be held by the Cleveland Engineering Society, Cleveland, plans for which have just been announced. The exhibit will be held at the society's headquarters in Carnegie Hall in the room in which are held the regular monthly meetings of local sections of national societies. It is the intention to have displays that are frequently changed, which will include latest developments of various new products and their application.

Each month will be devoted especially but not exclusively to the exhibit of different classes of equipment. Starting with machine tools and small tools in January, exhibits during the months of the coming year will include metallurgical equipment and materials, industrial electrical equipment, foundry equipment, miscellaneous mechanical equipment, power plant equipment, material handling equipment and various building materials.

Mining Engineers Announce Saunders and Douglas Medallists

D. W. Brunton, consulting mining engineer of Denver, and Dr. Zay Jeffries, metallurgical engineer of Cleveland, will be the respective recipients of the William Lawrence Saunders medal and the James Douglas medal, to be awarded at the annual meeting of the American Institute of Mining and Metallurgical Engineers in New York next February. This will be the first presentation of the Saunders medal, which goes to Mr. Brunton for the development and exposition of the principles and practice of ore sampling, for systematic daily mapping of mine geology, for the Brunton mining compass, and for engineering achievements in connection with modern high-speed tunnel driving. The medal was established in honor of one of the institute's former presidents.

Doctor Jeffries is the fifth recipient of the Douglas medal, which is given for distinguished achievement in non-ferrous metallurgy and which was established in honor of Doctor Douglas, twice president of the institute.

Chilean Iron Mines Under Control of Gutehoffnungshutte

The lawsuit over ownership of the Algarrobo Mines in Chile, instituted about 13 years ago by the Societe des Hauts Fourneaux, Forges et Acieries du Chili of Paris, against Messrs. Carbonel and Armand, who had sold the mines to the Gutehoffnungshutte, Oberhausen, Germany, is reported to have been decided by the High Court of Santiago, Chile, in favor of Messrs. Carbonel and Armand. The Algarrobo mines, among the richest in iron ore in the world, are consequently definitely under control of Gutehoffnungshutte and William H. Muller & Co. of The Hague, Holland.

British Iron and Steel Output Continues Small

LONDON, ENGLAND (By Cable), Dec. 16.—November production of pig iron was only 12,700 gross tons and steel production was 97,500 tons.

The production since the coal strike started in May, compared with other periods, has been as follows in gross tons:

	Pig Iron	Steel
1925		
Per month	519,700	616,400
1926		
April	539,100	661,000
May	88,800	46,700
June	41,800	34,500
July	17,900	32,100
August	13,600	52,100
September	12,500	95,700
October	13,100	92,900
November	12,700	97,500

The November pig iron output was next to the smallest since the strike.

Steel Treaters' Winter Sectional Meeting to be Held in Washington

The usual winter sectional meeting of the American Society for Steel Treating is to be held in Washington, Jan. 20 and 21, at the Hotel Mayflower. The following technical program has been tentatively arranged:

"Centrifugal Casting of Steel," by Leon Cammen, New York.

"Fundamental Research on Non-Metallic Inclusions in Steel," by C. H. Herty, Jr., Bethlehem Steel Co., Lackawanna, N. Y.

"Progress in the Study of Normal and Abnormal Steel," by Samuel Epstein and H. S. Rawdon, United States Bureau of Standards, Washington.

"Normality of Steel," by J. D. Gat.

"Review of the Metallurgical Activities of the Washington-Baltimore District," by Emil Gathmann, vice-president and general manager, Gathmann Engineering Co., Baltimore.

"Wear Resistance of Cutting Edges of Blanking Die Parts and Shear Blades," by W. J. Merten, Westinghouse Electric & Mfg. Co.

The technical sessions will be held on Thursday morning, Jan. 20, and on Friday morning and evening, Jan. 21. Inspection trips are scheduled for the afternoons of those two days. A banquet will be held on Thursday evening and the third "early birds' dinner" will take place on Wednesday evening, followed by a theater party. The newly elected national officers will hold their first business meeting of the year on Wednesday, Jan. 19, and on the same day the publication committee will meet.

Lessened Activity in Fabricated Structural Steel in November

WASHINGTON, Dec. 21.—Bookings of fabricated structural steel in November totaled 166,505 tons, or 63 per cent of capacity, according to reports received by the Department of Commerce from 181 firms with a capacity of 263,325 tons. This compares with bookings of 176,282 tons, or 66 per cent, in October, reported by 193 firms with a capacity of 266,255 tons.

Computed bookings in November aggregated 192,150 tons, while shipments for the month amounted to 222,650 tons, or 73 per cent. Computed bookings for the 11 months ended November totaled 2,296,650 tons, against 2,479,650 tons for the corresponding period of last year. Computed shipments for these periods were 2,644,350 tons and 2,513,200 tons, respectively. Unfilled orders this year appear to have been reduced by nearly 350,000 tons.

Galvanized Sheet Metal Ware Increases

Shipments of galvanized sheet metal ware, reported by the Department of Commerce for October, show a slight increase in quantities of pails and tubs shipped, with a decrease in other items. The dollar value in both cases, however, has increased. Pails and tubs were shipped to the amount of 140,778 doz., against 140,491 doz. in September. The value went up from \$476,976 to \$477,801. Other items were shipped to the extent of 41,295 doz., valued at \$275,461, in October, against 43,060 doz., valued at \$269,781, in September. The total value of October shipments is given as \$753,262, against \$746,757 in September.

Leather Belting Sales Decline

Domestic sales of oak leather belting in November are reported by the Leather Belting Exchange to have totalled 287,351 lb., valued at \$494,531, or \$1.72 per lb. This is a considerable reduction from the preceding month and from the corresponding month of 1925. In October the sales were 352,255 lb., valued at \$592,846, or \$1.68 per lb. In November, 1925, the total was 310,542 lb., valued at \$543,448, or \$1.75 per lb. The report covers the membership of the exchange, which represents about 60 per cent of the industry.

Chromium Plating Discussed at Gage Steel Committee Meeting

Chromium plating of gages was among the topics discussed at a meeting of the gage steel committee, held at the Engineering Societies Building, New York, Dec. 6.

A representative of a large automobile company reported that chromium plated gages had been found to give from 10 to 20 times the service of ordinary hardened steel. While difficulty is sometimes experienced from peeling or flaking of the chromium plating, and from inequalities of thickness, the speaker was of the opinion that chromium plating is not essentially more difficult than nickel or copper plating, and that all serious difficulties will be overcome.

In the discussion of the question of "file hard" and "file soft" gages the consensus of opinion seemed to be that "hardness" is an indefinite term and that at present there is no known relation between "hardness" and resistance to wear. It appears to be fairly certain that "hardness" cannot be taken as a measure of resistance to wear, at least without definite specifications as to the way "hardness" is to be measured and expressed, and as to the character of wear.

Results so far obtained are said to indicate that file hard chromium bearing steel is more resistant to wear than file hard carbon steel under conditions of metal to metal wear. This is true when gaging both file hard steel and an aluminum piston alloy.

Stellite is somewhat more resistant to abrasive wear than chromium plate, carbon steel or chromium bearing steel in file hard or file soft condition, and also slightly better than the two latter steels in file hard condition under metal to metal wear. Under conditions of metal to metal wear, chromium plate was said to excel all metals thus far tested. In general, steels which were soft to "file-touch" resisted wear better than file hard steels, while in abrasive wear the difference was negligible.

The question of additional service wear tests was discussed, and D. W. Ovaite, Buick Motor Co., Flint, Mich., and C. F. Dreyer, Western Electric Co., Chicago, agreed to cooperate with the committee in carrying out additional tests. Service wear tests on gaging aluminum and brass or bronze will also be made.

In reply to a question as to whether a definite recommendation could be made at this time as to the most satisfactory material for gages, B. H. Blood, Hartford, chairman of the committee, said that such a recommendation cannot yet be made.

An interesting question referred to dimensional permanence after hardening and drawing at various temperatures. H. J. French, senior metallurgist, Bureau of Standards, stated that in general a relatively high quench and high draw, or a relatively low quench and low draw, gave more consistent results in a chromium bearing steel, and greater dimensional permanence with time than did a high quench and low draw. He also stated that excessively high drawing temperatures are likely to produce too great a softening. It was also reported that artificial aging by holding at 100 deg. C. for one hour had been found to increase dimensional stability.

The next meeting of the committee will be held at the Bureau of Standards, Washington, in February, 1927, the exact date to be announced later by the secretary, H. W. Bearce, Bureau of Standards.

Ample Steel Reinforcement Needed in Concrete Mine Stoppings

Tests conducted by the United States Bureau of Standards and Bureau of Mines as to reinforced concrete mine stoppings, which are employed to prevent explosions from penetrating from one portion of a mine to another, have resulted in the conclusion that the steel reinforcement should carry well into the grooves cut in the sides, top and bottom of the mine opening. The tests so far have yielded the following results:

"A slab which had one per cent reinforcement failed by shearing along the bearing edges at a pressure of

about 45 lb. per sq. in. In this slab the steel bars did not extend past the supports. Another slab tested had the same amount of steel, but in this case it was carried past the supports. This slab failed by tension in the steel at a pressure of 75 lb. per sq. in. No shear cracks were observed. A slab which had one per cent reinforcement but which had alternate bars bent up to take the shear failed at 47 lb. per sq. in. by blowing out at the top.

"The reinforcement in all these slabs was placed only across the width upon which the pressures acted, leaving about 8 in. not reinforced. Although it was not anticipated that pressures would act on these areas, this is what happened in the case of the last-named slab. It is perhaps fortunate that the slab failed in this way, because it shows the importance of carrying the steel well into the grooves cut in the sides, top and bottom of the mine opening. A slab of the same type as the previous one, but with only half the reinforcement failed by tension in the steel, at a pressure of 50 lb. per sq. in."

Expenditures for Road Construction

WASHINGTON, Dec. 21.—Estimates of road construction for state and county highways for 1926 are placed at \$404,867,000 and \$463,494,000, respectively, the former involving new construction only, while the latter includes expenditures for both new construction and maintenance. Officials in the Department of Agriculture who have given careful study to the subject estimate that of the total expenditure for road construction approximately 2 per cent is spent for steel, including such products as reinforcing bars and structural material for bridges. On this basis the 1926 expenditures for steel in state and county road construction would be \$8,097,340 and \$9,269,880, making a total of \$17,367,220. As indicated this excludes expenditures for maintenance of state highways but includes that item in county highways.

Registrations in 1926 Total 21,600,000 Cars and Trucks

Cars and trucks registered in the United States as of Jan. 1, 1927, will total about 21,600,000, of which about 18,900,000 will be passenger cars and slightly less than 2,700,000 commercial vehicles, it is estimated by *Automotive Industries*, on the basis of incomplete figures for the year.

As of Jan. 1, 1926, the total was 19,844,000 vehicles, so the gain in registrations has been only 1,756,000, or slightly over 9 per cent, despite record-breaking production for the year. The reason for the failure of registrations to show a greater gain is seen in the large number of vehicles scrapped during the year. Approximately 2,230,000 cars and trucks were thus removed from registration lists, it is estimated.

High Tin Plate Mill Performance in India

A cable report from John Leyshon, general manager Tin Plate Co. of India, states that for the week ended Nov. 27, the output of black plate was 19,120 base boxes with the hot mills working 16 shifts. The total production for November was 76,000 boxes. These outputs were obtained with an average of less than 2½ white men on each double mill per shift.

The plant contains three units of two double hot mills each, one double mill on each side of a 1000-hp. motor drive. The plant was described in *THE IRON AGE* of Oct. 30, 1924.

The report referred to in *THE IRON AGE* of Dec. 16 that the blast furnace of the McKeefrey Iron Co., Leetonia, Ohio, might be dismantled is denied by the First National Bank of Pittsburgh, which controls the company. It is stated that this furnace is being kept in first-class condition, and that, although it is not operating at the present time, there is no thought of scrapping or abandoning it.

Hearing on Revision of Pig Iron Rates in C. F. A. Territory

CHICAGO, Dec. 21.—Competitive relations rather than any intention of the carriers to increase their revenue constitute the compelling reason for a revision of rates on pig iron in the Central Freight Association territory. This point was brought out in hearings held before Examiner Walsh of the Interstate Commerce Commission in Chicago, Dec. 13 to 16, on tariffs, now under suspension, which propose a complete revision of the rates on pig iron in the Central Freight Association territory. Eighteen protesting interests were represented, and each put in objections to such phases of the revision that they found unsatisfactory. The present status of the rates was attributed to the fact that the carriers had engaged in a rate war. It was charged that individual railroads had cut rates and thereby destroyed relationships between rates applying to competitive points.

Senate Approves Illinois River Improvement

WASHINGTON, Dec. 21.—The Illinois River development project of the Rivers and Harbors Bill was approved, Dec. 17, by the United States Senate. The Illinois River item, as outlined in the bill, provides for the construction, at a cost of \$3,500,000, of a channel 9 ft. in depth and 200 ft. wide from the mouth of the Illinois River, that is at its junction with the Mississippi River, to Utica, Ill. Two dams, constructed and owned by the State of Illinois, will be turned over to the Federal Government.

The Illinois project was given approval in consequence of a compromise between opponents of diversion of water from Lake Michigan on the one hand and the Chicago and Illinois interests on the other.

This bill does not cover the diversion of water from Lake Michigan, and it is the general impression that the water diversion controversy between Illinois and other Lake States is left in status quo.

Automobile Resumption Slow

Automobile production is at the lowest point since 1921, according to *Automotive Industries*, as a result of drastic curtailment by most of the factories and complete temporary shutdowns by several of the largest plants. Trucks are holding up better, but the combined total of output for the United States and Canada of passenger cars and commercial vehicles for December will be considerably under 200,000.

Current orders to equipment and material makers do not suggest a resumption after the first of the year of anything approaching full time production, but the factories that have been closed down will be in position to start fairly heavy shipments to distributors and dealers. Export sales are under the level of a year ago.

Export Managers Meet in March

The 1927 get together meeting of the Export Managers Club of New York, Inc., which has become one of the established annual features in American foreign trade conferences, will be held Tuesday, March 22, at the Hotel Pennsylvania, New York. The general subject will be "The Essentials of Sales Management in Exporting."

Four hundred active export managers comprise the membership of the organization and from these men six have been selected to present the major topics of the subject. Each address will be followed by an open discussion. The meeting, as usual, will be followed by a banquet, at which the broader and less technical factors of our overseas trade will be presented by men of international reputation. The meeting is open to the public and programs and reservations may be obtained from the club office, 1138 Woolworth Building, New York.

Slight Increase in Steel Barrels with Forward Business Large

Production of steel barrels in November is reported by the Department of Commerce to have amounted to 510,489 units, compared with 493,363 in October, and with 498,929 in November of last year. The two most recent figures are the lowest since January, a high for the year having been reached in June with 626,812.

Shipments by members of the Steel Barrels Manufacturers Association aggregated 373,380 units, of which only 18 were for export, these going to Canada and Newfoundland. More than 100,000 barrels went to New Jersey, with Pennsylvania, New York, Texas, Illinois and Indiana following, in that order. Shipments by institute members represented 46.7 per cent of their total capacity and aggregated \$1,231,777 in value. During the month, 35.8 per cent of the daily productive capacity for I.C.C. barrels was used and 49.6 per cent of the capacity of light barrels.

Unfilled orders of the 31 companies reporting to the Department of Commerce call for 1,732,007 units, of which 332,106 are required within 30 days. This is a gain of nearly 600,000 units during the month, and represents the largest forward business since January. Stocks at the end of the month amounted to 54,377 units, the largest amount in more than a year, but less than 11 per cent of the month's shipments. On the basis of 25 working days, stocks represented less than three days' production, while unfilled orders represented more than three months' production.

Canadian Production of Pig Iron and Steel Declines in November

TORONTO, ONT., Dec. 21.—The production of pig iron in Canada during November totaled 52,345 gross tons, a decline of 25 per cent from the 70,124 gross tons made during the month of October. By grades the November production consisted of 24,427 tons of basic, 27,232 tons of foundry and 686 tons of malleable iron. The production of foundry iron showed an increase of 4181 tons for the month under review, while the output of basic and malleable showed a decided falling off. For the 11 months of the year ended with November the production of pig iron in Canada amounted to 683,532 gross tons, or an increase of 33 per cent over the 515,508 gross tons reported for the corresponding period of 1925. During the month of November one blast furnace was blown out at Sault Ste. Marie, Ont., leaving but five active stacks in Canada located as follows: British Empire Steel Corporation, Sydney, N. S., two; Steel Co. of Canada, Ltd., Hamilton, Ont., two; Algoma Steel Corporation, Sault Ste. Marie, Ont., one.

The production of steel ingots and castings during the month of November totaled 54,313 gross tons, a decline of 15 per cent from the 63,542 tons reported in October. For the first 11 months of the year the production of ingots and direct steel castings amounted to 718,394 gross tons, or an increase of 4 per cent over the 690,342 tons reported for the corresponding 11 months of 1925.

Fewer Mechanical Stokers Sold

November sales of mechanical stokers reported by the Department of Commerce from 12 establishments numbered 85 units, with a total of 27,606 hp. This is the lowest power recorded for stoker sales in more than two years. It compares with 40,780 hp. in October and with 33,461 hp. a year ago. The high point of 1926 was reached in April, with 70,055 hp.

The purchase of the Steptoe shaper business by the Western Machine Tool Works, Holland, Mich., was mentioned in the machinery market division of *THE IRON AGE*, Dec. 16. The new owner plans to continue manufacturing the complete line, which covers a range of 14 to 24-in. sizes. The shapers are arranged for cone pulley drive or motor drive.

Business Analysis and Forecast

BY DR. LEWIS H. HANEY

DIRECTOR, NEW YORK UNIVERSITY BUREAU OF BUSINESS RESEARCH

Current Statistical Data, Considered Independently of Trade Opinion, Indicate That:

DOWNWARD trend in steel production is likely soon to reach a point regarded as normal.

Finished steel markets do not seem to be facing any important decline.

Steel ingot production is about 5 per cent above present estimated normal requirements.

Pig iron production is approximately 20 per cent above estimated normal requirements, an excess which calls for correction.

Somewhat lower prices for pig iron seem to be in prospect.

Scrap prices are weaker and may show a moderate decline, with higher prices later.

OUR steel chart this month has only one notable point—it shows that production in November had fallen nearly to the estimated normal line. This reflects the current recession in business, and again demonstrates that the steel industry is an excellent thermometer of the general industrial situation. By the same token, it shows that the steel makers are in close touch with actualities and have taken in sail promptly with the coming of less favorable business weather.

November production of steel ingots, at 3,722,000 tons, compares with an October production of 4,093,000 tons and is nearly 200,000 tons below the figure for November, 1925. Our adjusted index, which allows for the usual seasonal changes as well as for the long-time monthly rate of increase in the country's requirements, was 104.9, against 111.1 in October and 116.4 in September. Thus steel production is less than 5 per cent above the estimated normal. The latter, we figure, would have amounted to about 3,546,000 tons in November. If the ingot output falls to around 3,425,000 tons in December, it will almost exactly equal our estimate of normal for the month.

Increase in Corporation's Orders Not So Significant

At the same time that the ingot output declined, the unfilled orders of the United States Steel Corporation showed an unexpectedly sizable gain, the November figure being about 123,000 tons (about 3 per cent) larger than that for the preceding month. A part of the increase, however, represents the usual seasonal gain which almost always occurs in November, largely on account of orders for rails. Another part of the gain is probably to be attributed to a decline in shipments. Thus the gain is not so significant as is often the case.

In any event, at 3,807,000 tons, the unfilled orders do not make a very favorable showing in comparison with the figures for the past two years. At the end

of November, 1925, the unfilled orders were 4,582,000 tons and in 1924 they were 4,032,000 tons. The increase this year, too, was small in comparison with the gains in recent years. Certainly there is too little forward business on the books of the steel maker, considering the season, to be very encouraging.

It is something, however, that the trend was upward and has been so for two months. It seems reasonable to say that, under the circumstances, the outlook for the industry is at least fair.

Steel Prices Appear Stable

November average of THE IRON AGE weekly index of finished steel prices was 2.453c., against 2.45c. in the preceding month and 2.433c. a year ago. There has been a long period of stability in the price of finished steel. In view of the prompt curtailment of production and the sustained volume of unfilled orders, it is not probable that there will be any important downward trend in steel prices during the near future.

Pig Iron Output Far Above Normal

JUST as the decline in steel ingot production to a point near normal was the outstanding event recorded in the steel chart, so the rise in pig iron production to a point far above normal is the most notable fact illustrated in the iron chart. Except for January, April and May, pig iron production in November was farthest above our estimate of normal requirements that has been seen in any month this year. We note, too, that the average daily production of pig iron has nearly reached the level at which, in recent years, pig iron prices have begun to decline.

The output of 3,237,000 tons of pig iron was a little lower than in October, but the decline was much less than usual for the month and, in contrast with steel ingots, the pig iron figure was considerably larger than a year ago (3,023,000 tons). Accordingly, our adjusted index rose to a point 20 per cent above normal;

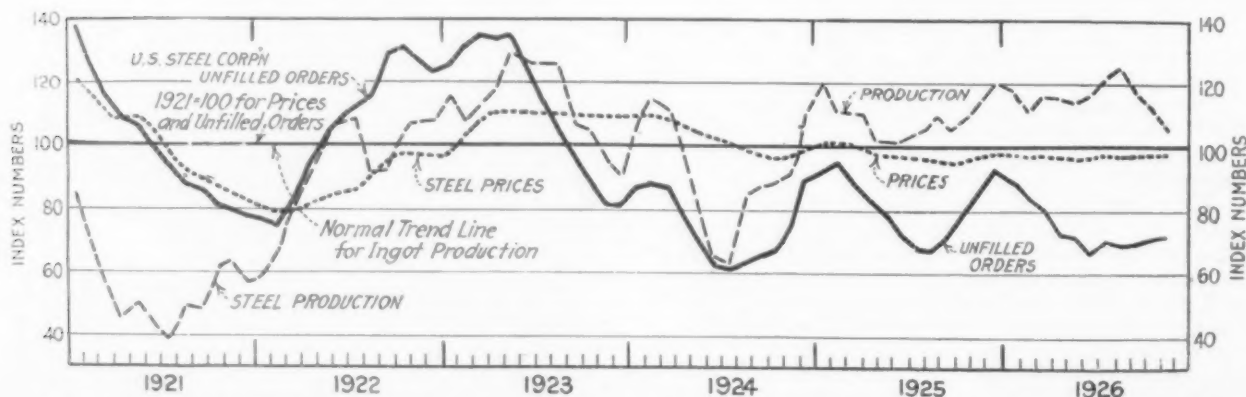


Fig. 1—November Steel Ingot Production, Corrected for Normal Growth of the Industry, Continued the Downward Trend Noted Last Month. Continued high consumption of steel, however, has kept the production curve well above normal

In This Issue

Is there a relation between hardness of metals and resistance to wear?—No, says automobile manufacturer. Some "file-soft" steels resist metal-to-metal wear better than "file-hard" steels.—Page 1772.

Believes pig iron output is relatively too high.—Production large as compared with steel, says Dr. Haney, prophesying that the excess will soon be corrected.—Page 1777.

Factory credit union aids workers.—Loans at 8 per cent tide them over emergencies. Interest on deposits is $4\frac{1}{2}$ per cent. Norton credit organization is conducted entirely independent of company supervision.—Page 1760.

Airplane may now be classed as a machine shop product.—Modern plane is virtually a "flying machine." Metal with its superior strength, workability, and durability is rapidly replacing wood.—Page 1759.

Chromium-plated gages said to give 10 to 20 times the service obtained from ordinary hardened steel.—In metal-to-metal wear chromium-plate is declared to excel all other metals thus far tested.—Page 1772.

When does it pay to install a flywheel on rolling mill motor?—The answer can be determined accurately by considering cost of wheel, running cost, friction losses, and slip resistance.—Page 1761.

Steel Common sold at $8\frac{3}{8}$ in May, 1904, and at 160 in December, 1926.—Book value in 1925 was \$281 per share. When the Steel Corporation was formed in 1901 the total capital structure represented \$147 for each ton of ingot capacity. Now the figure will be \$69.—Page 1762.

November sheet sales only half what they were one year ago.—But 1926 will establish a new record, as total sales for first 11 months were only 19,356 tons under total for 1925.—Page 1763.

Looks for continuance of prosperity well into 1927.—Westinghouse head says there are several factors that should exert a favorable influence during the coming year.—Page 1763.

Rise of franc injures French business.—Export business has been curtailed and sellers realize that prices must be reduced before long.—Page 1768.

Automobile registration will show a gain of about 9 per cent for year.—Total cars and trucks licensed at Jan. 1, 1927, will be approximately 21.6 millions, a gain of 1.75 millions over Jan. 1, 1925, total. Smallness of increase is due to heavy scrapping.—Page 1772.

Some significant trade statistics.—Ohio foundries report a slight increase in employment during November.—Page 1764; Illinois metal industries show a decline of 1.3 per cent.—Page 1768; structural steel bookings declined 4.5 per cent from October.—Page 1771; wholesale commodity prices dropped 1.6 per cent.—Page 1768.

Automobile production said to be at lowest point since 1921.—December output of cars and trucks will probably be considerably under 200,000. Prospects are not bright for an early resumption of full-time production.—Page 1773.

Have not violated Anti-Dumping Act, Germans declare.—Prices charged in America are same as offered in other foreign markets, they say.—Page 1769.

Duralumin must be cold-worked within several hours after heat-treating to get best results.—It hardens quickly after the first few hours and then continues self-hardening slowly for about ten days before maximum hardness is reached.—Page 1759.

Metal prices show smallest advance over 1913.—Of the eight major commodities, metals and metal products are the lowest in average price compared with 1913 basis, having advanced but 26.5 per cent.—Page 1768.

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Telling of Mistakes and Failures

NOW and then the suggestion is made that more space ought to be given in these columns to discussing mistakes and failures in industry. Certainly much may be learned in this way. Statements about such matters are, of course, hard to substantiate. One does not broadcast his errors of judgment. Also, in some cases publication might be regarded rightly as damaging. There is the difficulty of unquestioned proof of the assertions of a third party.

As a matter of fact, improvements are usually the result of efforts to overcome shortcomings of one sort or another. Descriptions of them carry the inference, more or less obvious, that earlier errors, misconceptions, limited vision and the like have been corrected. The business journal in this and other ways takes every opportunity, within the limits of propriety, to save its readers from troubles experienced by others.

For News Summary See Reverse Side

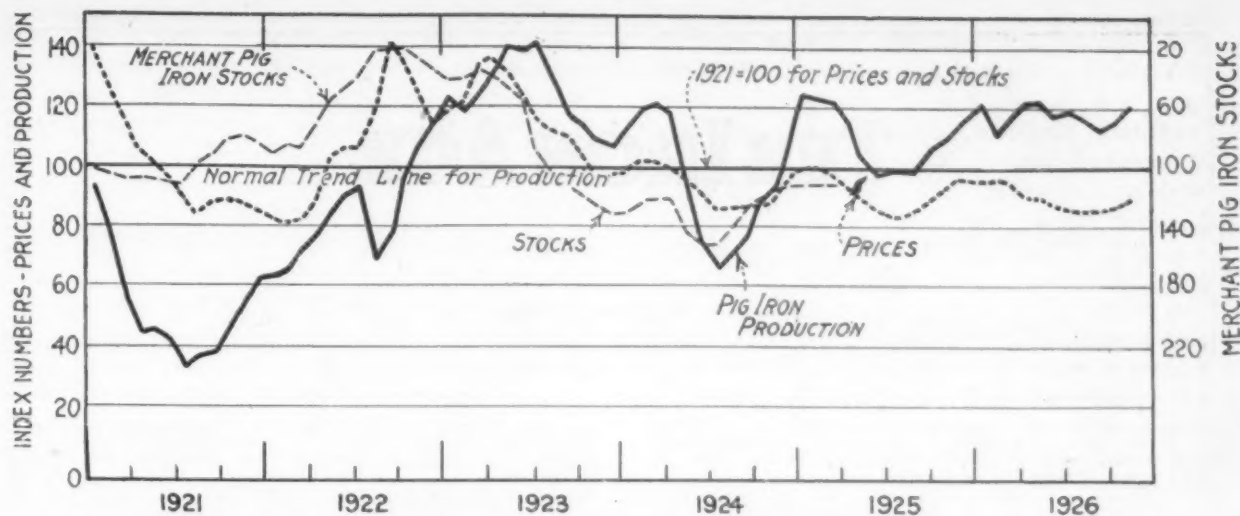


Fig. 2—In Spite of a Continuing Drop in the High Rate of Steel Production, Pig Iron Production, for Two Successive Months, Has Shown a Substantial Gain, After Allowance Has Been Made for Seasonal Influences. Prices have been below the normal line for many months

that is, the index was 120. This compares with 116.5 in October, and 110.2 in November, 1925.

Too Much Pig Iron for the Steel Output

Such a rate of production, of course, means that the pig iron output is excessive in comparison with the activity of steel making. This is the first time in years that, for two months in succession, our adjusted pig iron production curve has risen, while at the same time (1) it is higher than the steel curve, and (2) the steel curve is declining. The situation as we see it means over-production of pig iron, an excess that must be corrected.

In spite of the increase in production (and almost

entirely because of the late high prices for fuel) the November average of THE IRON AGE pig iron index increased to \$20.13, in comparison with \$19.69 in October. A year ago, however, the price averaged \$21.17. That the situation is illogical is proved by the fact that signs of the inevitable decline have already appeared; in the second week of December THE IRON AGE index fell back to \$19.96.

Spot furnace coke has fallen from \$5 in the week of Nov. 2 to \$3.50, and bituminous coal, according to the Coal Age composite, has fallen from \$3.61 in the week of Nov. 8 to \$2.59. Fuel contracts at the higher

(Concluded on page 1800)

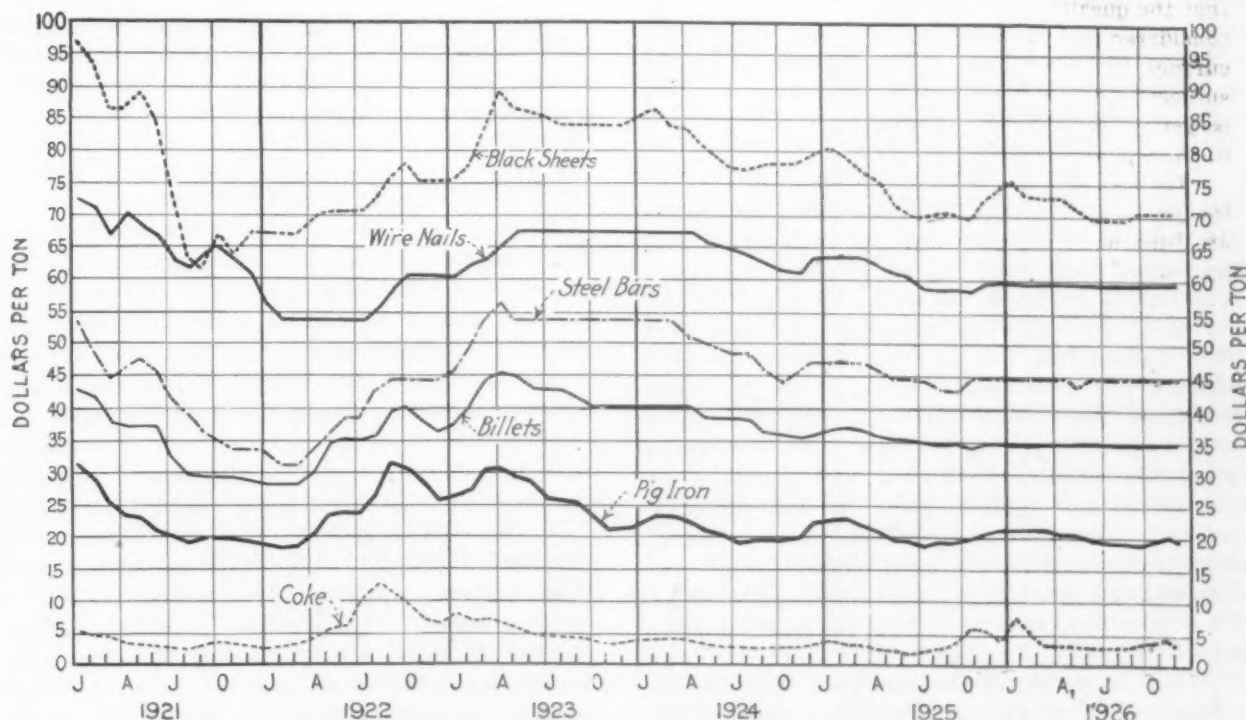


Fig. 3—Readjustment May Come, Within the Next Few Months, in the General Steel and Iron Price Structure. On the basis of billet, bar and nail prices, pig iron and scrap appear to be too high, while sheets, as often, are too low

Schedule of the next installments of the *Business Analysis and Forecast*, by Dr. Lewis H. Haney, Director New York University Bureau of Business Research, follows: Dec. 30—General Business Outlook; Jan. 13—Activity in Steel-Consuming Industries; Jan. 20—Position of Iron and Steel Producers.

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The Dividend in "Steel"

MUCH to the surprise of Wall Street and of many other factors in finance and industry, the directors of the United States Steel Corporation decided on Dec. 16 in favor of a 40 per cent stock dividend to the common stockholders of the corporation. The surprise was not in the newness of the proposal, for some of the stockholders have been urging for many months that the dividend payment be increased. But only a month previous to last week's meeting it was officially announced that the question of an extra dividend had not been considered, and in some way the view had become current that Chairman Gary's expressions on the subject at the last annual meeting and on other occasions signified the relegation of the question to the indefinite future.

The fact that the action was taken so close to the year-end, when financial and industrial leaders are thinking of the new year rather than the old, has caused much stressing of its significance as a prophecy of prosperity in 1927. It is safe to say that a 40 per cent stock dividend would not have been ordered had the directors believed business reaction was just ahead. But perhaps too much of future import has been read into Thursday's action. The corporation has been 25 years accumulating the surplus, of which a part is now to be transferred to capital account and distributed to stockholders, and Judge Gary's statement definitely ascribes the directors' decision to their belief that "the property conditions and earning capacity of the corporation justify the proposed action at this time."

While it is evident that the plan contemplates a larger dividend distribution to the stockholders than they are now receiving, it does not follow that \$9.80 a year, instead of the present \$7, for each share now held will be the basis after the 40 per cent increase in the existing \$508,302,500 of common stock. But the fact that earnings available for common stock dividends—except such part as may be appropriated at the end of the year for new construction (in recent years about \$5 a share)—were \$13 in the first nine months of this year suggests that the directors look upon the \$7 common stock dividend as reasonably assured.

The exceeding conservatism of the Steel Corporation's dividend declarations has probably been more commented upon than any other feature of its policies. Spectacular as the action of last week seemed in the setting given it in the news of the day, its moderation will appear in the light of the dividend declarations of the past. From the formation of the corporation in April, 1901, to the end of 1925 the common stock dividends amounted to 124¼ per cent, or almost exactly 5 per cent per year, the total being \$631,544,001.25. With an undivided surplus of \$521,863,109 on Dec. 31, 1925, or over 80 per cent of all the common stock dividends of 25 years, it may well be said that the directors have acted with all their long-reputed restraint and circumspection.

Factors in the Trade Outlook

AS the period of trade activity is prolonged, two questions of opposite character spring up: Should the period of prosperity be considered as so much nearer its end, or does its continuance indicate that there need not be any end so long as present forces are at work? It has been said that true prosperity has within itself the means for its perpetuation. That is the nub of this matter. Have we been borrowing from the future, or has the activity laid the foundation for additional activity?

Nearly always we have, as to the future, those who predict better things and those who predict worse things. Also we have those who present lists respectively of "favorable factors" and "unfavorable factors," without attempting to add them up and compute the net balance. The difficulty always is to weigh the relative importance of the points.

One useful method of approach is to recall what was said at times in the past, where there has been opportunity since to see how things worked out. The important case of installment buying is open for such study. A year and more ago there was much criticism of this relatively new practice. It was said that the future was being mortgaged, that while business was stimulated for a time it was stimulated by activity borrowed from a future in which there would be correspondingly less busi-

ness. It is easy to see that this criticism has been decreasing, that the matter has been working out better than many expected. We do not hear that installment buying has decreased because of people having too much to do to complete payments on purchases of a year and more ago.

The practice could have become topheavy by expanding too rapidly. That apparently it has not done. It has been estimated that the volume of this so-called installment buying in the past year was somewhat over six billion dollars. But in round figures the national income for the year may be estimated at 75 billions. Even after some allowances were made, the proportion would be only about 10 per cent. Of course many individuals go beyond that in their engagements, but others do less or nothing, and they are possible installment buyers next year and the year after.

Again we may look into the past and recall that more than a year ago the opinion was expressed with confidence that building operations were on the verge of a great drop, but we see now that for months afterward building operations continued to increase. At present there is visible only a mild recession. Overbuilding or anticipation means that the new facilities do not have adequate earning power immediately but must wait until the country grows some more. If building merely wanes, other activities may reasonably be expected to step in and take its place.

Thus experience of the past year has been tending to reduce rather than to increase two of the dangers talked of a year and more ago. The year has furnished another contribution to soundness. It has been well argued that the much vaunted consuming power due to high wages has an element of instability, in that it would be reduced by a chance measure of unemployment, and that this reduced buying would create more unemployment, and so on, whereas earnings of capital are more likely to be spent when costs are low than when they are high, and thus that kind of buying power tends to exert a stabilizing influence. Now the record of the past year is that profits of large corporations have increased considerably more than the volume of trade, one recent estimate being 25 per cent for the one against 5 per cent for the other.

IN honoring James H. McGraw, the thousand engineers, educators, editors and heads of industry who gathered in New York on his 66th birthday anniversary last week signalized also the advance of business publishing at its best to the place of large influence it holds today. As the leading personality in that field, Mr. McGraw was well described by one of his birthday eulogists who called him a "sane idealist." When he came to New York 40 years ago, few business publications could claim to have made any direct contribution to the advancement of the branch of industry or merchandising to which they were devoted. Mr. McGraw has labored in season and out of season for higher standards in business journalism, holding that no publication in that field has reason for existence if it be not at once information bureau, teacher, friend, philosopher and guide, of industry and trade. Both in his own organization and in his relations with his contempo-

raries he has been a driving force directed to the realization of a constantly expanding conception of service. In working to that end, he has been as unsparing of himself as he has been intolerant of mediocrity in the standards and performance of his coworkers. Industry and industrial publishing freely acknowledge their debt to his vision, his courage and his practical idealism.

Raw Materials Plus Service

SENATOR ARTHUR CAPPER has advanced and sharpened on the thought that the trouble of the farmers is that they produce goods that eventually are sold for about 30 billion dollars a year, whereof the producer gets only about 10 billions, wherefore there is in the subsequent transactions too much profit to the middlemen, speculators and others, that ought rather to accrue to the producer himself. Cure this evil and the trouble of the farmers is cured.

We do not know whence Senator Capper derives his figures, but they look plausible, nay, even probable. The mistake is rather in the deduction from them. In our domestic economy the multiplier of three appears to be of great significance. The total of our national income as computed by the economists runs year after year just about thrice the total of the value of all of our raw materials—agricultural, mineral, forest products, etc.—as statistically reported. This does not represent profit on the goods of the producer, except to a relatively slight extent. In the main it represents service rendered in transportation, manufacturing and merchandising; and moreover the services rendered in government, in education, and by the professions. If the basic producers could hypothetically arrange to get the tripled value of their products, as of the ultimate consumer, they would themselves have to arrange for all of these subsequent services, i. e., hire them.

That the addition of service to raw material product is so great is no cause for either wonder or disgruntlement if anybody really reflects upon it. Our total number of workers is about 45 million. Not to exceed 10 million are engaged in agriculture, about one million in mining, and possibly a total of about 12 million occupied in the production of all raw materials. This ratio of 12 to 45 does not correlate with the value ratio of 1 to 3, for the values of raw materials as statistically reported are not of the farm and mine, and some service in transportation and preliminary manufacturing has already been included in them. It is sufficiently approximate, however, to show that in the aggregate the difference between the values of things at the farms and mines on the one hand and in the market and mail order houses on the other can accrue to profiteers and speculators to only slight degree.

NOW that the American Engineering Council has indorsed the bill for increasing the salaries of Federal judges, would it not be in order for the legal profession to espouse the cause of better fees and salaries for engineers? The many lawyers in Congress might well study carefully the equities of the case when the call comes for greater

appropriations for members of the engineering professions in Government bureaus, for example. The turnover among the technicians in the Bureau of Standards is the best proof of inadequate compensation. We are by no means suggesting a log-rolling policy, or the doing of favors with a view to getting return in kind. It is a matter of advertising the facts so well that other professional groups will support specific requests that are reasonable and just. It argues much for any cause that it has received the spontaneous support of those not at all directly benefited, as in the pronouncement of the engineers in behalf of the judges.

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It would be useful to know what is the natural seasonal variation in production of automobiles. There have been such swings that a year's showing does not set a standard. In its annual "Facts and Figures" the National Automobile Chamber of Commerce gives a statement, for both passenger

cars and trucks, intended to represent "seasonal variation," without indicating the method of compilation. To furnish a basis for thought on this subject the table below is given. It shows this year's passenger automobile production in the United States by months, with the corresponding index number, computed by relating each month's production to one-twelfth of this year's total, also the index numbers of the National Automobile Chamber of Commerce. The December production is estimated at 92 per cent of November, since in the past four years that has been the average relation between the two months:

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May	373,140	116.9	119.0
June	339,547	106.3	114.0
July	316,997	99.7	109.6
August	380,258	119.1	111.0
September	350,913	110.0	100.2
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The first four months of this year ran far above the expectancy of the National Automobile Chamber of Commerce. The next three ran well behind and the next two recorded gains. Finally the last three months ran quite behind. This does not prove either that the year has had abnormal swings or that the National Automobile Chamber of Commerce figures would not ordinarily indicate normal. One thing it does indicate, that if the light production in the last three months of the year is out of line, so also was production in other months of the year. The phenomenon is not a new one. In time, perhaps, production will be more closely regulated to a steadier demand, and there will be more statistical information by which to measure departures.

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In connection with the appointment of Frederick M. Feiker as its managing director, the Associated Business Papers, Inc., announces that it will enter upon a broader program in the promotion and development of higher standards of journalism for the business press. Mr. Feiker has had 15 years' experience as editor and publisher, a year and a half in the Department of Commerce and three years in association work as vice-president of the Society for Electrical Development. Graduating as an electrical engineer from Worcester Polytechnic Institute in 1904, he became "technical journalist" for the General Electric Co., later established *Factory* for the A. W. Shaw Co. at Chicago and was chairman of the editorial board for both *System* and *Factory*. Going to New York, he was for a time editor of *Electrical World*, then vice-president and editorial director of the McGraw-Hill Co., and in 1921, at Secretary Hoover's invitation, joined the latter to aid in the reorganization of the Department of Commerce in its relations with trade and industry. In 1923 he took up his work with the Society for Electrical Development which he leaves on Jan. 1 to direct the activities of the Associated Business Pa-

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2. Business schools and engineering colleges engaged in turning out young men for industry, loaded with book knowledge and with a well developed appetite for study.
3. Government bureaus and departments that serve or exercise control over industry or commerce.
4. The business press, functioning for engineering, trade and industry, that ties together all the contributing factors and provides a practical medium for the flow of news, discussion, experience, continuing study and progressive thought.

"In coordinating these four influences in behalf of industry," Mr. Feiker adds, "lies the great opportunity of the business press, which is the last stronghold of individual journalism."

FABRICATED STRUCTURAL STEEL

RAILROAD EQUIPMENT

Philadelphia Building, Out for Bids, Will Take 15,000 Tons—Awards Light

Structural steel awards were very light in the past week, totaling less than 11,000 tons. Only one award of size is reported, an apartment building in New York requiring 2500 tons. Included in about 32,500 tons of new projects out for bids is a Philadelphia office and bank building, calling for 15,000 tons. Highway bridges connecting the New York-New Jersey vehicular tunnel on the New Jersey side will require 4600 tons, and a Louisville, Ky., office building will need 4000 tons. Awards follow:

PROVIDENCE, R. I., 400 tons, gymnasium for Brown University, to New England Structural Co.
 REVERE, MASS., 175 tons, theater and stores, to New England Structural Co.
 DANVERS, MASS., 100 tons, school, to New England Structural Co.
 NEW YORK, 2500 tons, first unit of Tudor City for Fred F. French Co., to Hedden Iron Construction Co.
 NEW YORK, 400 tons, two public schools and theater, to small independent local fabricator.
 BUFFALO, 230 tons, Chevrolet Motor Co., parts division, to Pittsburgh Bridge & Iron Co.
 DETROIT, 2000 tons, Federal Reserve Bank, to American Bridge Co.
 CLEVELAND, 370 tons, drums and other refinery equipment, Standard Oil Co. of Ohio, to Arthur G. McKee & Co.; 80 tons, coal house, to T. H. Brooks & Co.
 JACKSON, MICH., 400 tons, Jackson City Bank Building, to American Bridge Co.
 KENILWORTH, ILL., 775 tons, gymnasium, to A. Bolters Sons.
 JAMAICA, N. Y., 500 tons, public school No. 117, to Easton Structural Steel Co.
 LITTLE FALLS, N. J., 400 tons, State highway bridge, to American Bridge Co.
 WILKES-BARRE, PA., 700 tons, 1,000,000 cu. ft. gas holder, to Stacey Mfg. Co.
 GRAND RAPIDS, MICH., 200 tons, power house for Leonard Refrigerator Co., to Lakeside Bridge & Steel Co.
 PONTIAC, MICH., 250 tons, Eagle Theater, to Flint Structural Steel Co.
 LANSING, MICH., 600 tons, Demonstration Hall, to Flint Structural Steel Co.
 EVANSVILLE, IND., 250 tons, two barges for the Bedford Nugent Co., to Jones & Laughlin Steel Corporation.
 SAINT CLOUD, MINN., 300 tons, 300,000 cu. ft. gas holder, to Stacey Mfg. Co.
 EMERYVILLE, CAL., 100 tons, service station for the Associated Oil Co., to Judson Mfg. Co., San Francisco.
 OAKLAND, CAL., 375 tons, syphon for the East Bay Municipal Utility District, to Western Pipe & Steel Co.
 SAN FRANCISCO, 115 tons, apartment building on Lombard Street, to Schrader Iron Works, San Francisco.
 SAN FRANCISCO, 170 tons, building for the Pacific Bone, Coal & Fertilizer Co., to Minneapolis Steel & Machinery Co.
 HONOLULU, T. H., 275 tons, machine shop and sugar mill for the Hawaiian Pineapple Co., to Western Iron Works, San Francisco.

Structural Projects Pending

Inquiries for fabricated steel work include the following:

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 BALTIMORE & OHIO RAILROAD, 3200 tons, bridges.
 STATE OF NEW YORK, 1000 tons, highway bridges.
 PHILADELPHIA, 350 tons, substations Nos. 4 and 5 for Broad Street subway.
 PHILADELPHIA, 15,000 tons, office building for Philadelphia-Fidelity Trust Co. on Broad Street from Walnut to Sansom Streets; bids close Jan. 8.
 EPHRATA, PA., 300 tons, mill building for Stunzi Sons' Silk Co.
 PENNSYLVANIA RAILROAD, 175 tons, bridge over Little Beaver Creek.
 CHICAGO, 750 tons, Lucy Flowers Public School.
 CHICAGO, 350 tons, theater at 4700 South Parkway; Levy & Klein, architects.
 LOUISVILLE, KY., 4000 tons, Heyburn Building.
 ST. LOUIS, 750 tons for municipal waterworks.
 SAN JOSE, CAL., 400 tons, Medico-Dental Building; bids about Dec. 23.
 OAKLAND, 1000 tons, building at Euclid and Grand Avenues.
 KLAMATH FALLS, ORE., 225 tons, Pelican Theater; new bids to be called soon.
 SEATTLE, WASH., 140 tons, Woman's Building, University of Washington.

Orders for 2900 Freight Cars, 35 Locomotives, 250 Ore Cars and 600 Underframes

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Commemorating 41 years of service to the engineering and industrial progress of the country, and incidentally the 66th birthday of the guest of honor, over one thousand leaders in business, industry and science gathered at dinner at the Hotel Astor, New York, on Dec. 17, as a testimonial to James H. McGraw, president of the McGraw-Hill Publishing Co., Inc., New York, publisher of technical and business magazines and books.

The committee that sponsored the dinner included Thomas A. Edison, as honorary chairman; Secretary of Commerce Herbert Hoover; Gen. Guy E. Tripp, chairman Westinghouse Electric & Mfg. Co.; Gerard Swope, president General Electric Co.; and Owen D. Young, chairman General Electric Co.

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Iron and Steel Markets

Year-End Slackening in Output

New Buying Less, But in Some Lines Specifications Increase—
Mills at 65 Per Cent, with No Marked Upturn
Indicated for Early January

CONTINUED lessening of new demand for finished steel has modified some of the recent predictions of a definite upturn in mill operation in early January. There will be naturally some recovery from holiday slackness, but no marked change from the production rate of the first half of this month.

Today the industry as a whole is close to a 65 per cent basis, with the Steel Corporation slightly above 70 per cent. In the Mahoning Valley some companies are scheduled for 60 per cent for the remainder of the month. General suspension from noon of Friday until Sunday night will make this the low-production week of the year.

Movement of steel to the automobile industry this month and next will exceed that of October and November, but much of it will be releases on suspended shipments and will enter into cars built in February and later. New orders for motor car steel await more definite data as to spring demands upon the builders.

In both rolling stock and track steel railroad activity continues to be the best source of new buying. Chicago mills added 30,000 tons of track accessories to their books in the week. The Pennsylvania Railroad has placed 6000 tons of tie plates, 2000 tons of spikes and 2000 tons of angle bars and track bolts, two-thirds of these contracts going to Chicago mills.

New orders for heavy freight equipment totaled 2900 cars—1200 for the Lehigh Valley, 1000 for the St. Paul and 700 for another Western road. In addition, 35 locomotives were bought by the Rock Island; also 250 ore cars and 600 steel underframes for cars. The Santa Fe is inquiring for 1000 refrigerator cars, the Mobile & Ohio for 600 of miscellaneous types and the Chesapeake & Ohio for 200.

Although the week's structural steel awards were light, less than 11,000 tons, much structural work is pending, one new project, an office building in Philadelphia, calling for 15,000 tons, and work in connection with the New York-New Jersey vehicular tunnel for 4600 tons. An office building in Louisville, Ky., will take 4000 tons.

Bookings of fabricated structural steel dropped from 66 per cent of capacity in October to 63 per cent in November. Last year the October percentage was 89 and the November figure 71 per cent. The eleven months of this year show a falling off of 7 per cent from the eleven months of 1925.

Chicago reports make a point of the increased specifications for finished steel products, par-

ticularly bars and sheets, from manufacturing plants and in some cases from jobbers whose present stocks are not sufficient to meet requirements expected early in January. At Cleveland also some consumers of bars whose stocks are low are calling for deliveries in the first week of next month.

Shipments of sheets to Dec. 1 point to a new record for the year. Sales, production and shipments of the independent makers showed 11½ to 12½ per cent reduction in November from October, but their shipments for eleven months amounted to 3,175,000 tons, or only 19,000 tons below the total for all of 1925. Production has been about 3,210,000 tons, and thus not much over 1 per cent in excess of shipments.

Tin plate sales have been large, both in Eastern and Pacific Coast markets. Nearly all large users in Eastern territory have contracted for the first half and one producer is practically booked for that period.

Pipe mill operations are at 70 per cent, which means a larger tonnage than is commonly realized in view of increased capacity of fully 30 per cent since 1925, taking into account recent seamless tube mills. Replenishment of mill stocks partly explains present activity.

On the 12,000 tons of pig iron wanted for plumbing supply foundries in the Central West bids of \$18.50, Valley furnace, for No. 2 iron represent a decline of 50c. a ton. In Eastern pig iron markets also the expectation of a reduction in non-union coal miners' and coke workers' wages still acts as a brake on new business.

An increasing use of gratings is providing an important outlet for narrow bands.

Exports of iron and steel products in November, at 247,343 tons, were the highest in nearly three years. The gain is largely in pipe, rails and galvanized sheets. The eleven months of this year are nearly 22 per cent ahead of the same period last year.

The European Raw Steel Cartel, our cables report, now includes Czechoslovakian, Hungarian and Austrian producers.

Foundry iron weakness at Valley furnaces has brought down THE IRON AGE pig iron composite price to \$19.88, from \$19.96 last week. This is the third small decline in successive weeks. The recent high of \$20.21 was in November.

For the eleventh week THE IRON AGE composite price for finished steel remains at 2.453c. per lb., the exact level of one year ago.

A Comparison of Prices

Advances Over the Previous Week in Heavy Type, Declines in Italics

At Date, One Week, One Month, and One Year Previous

For Early Delivery

Pig Iron, Per Gross Ton:	Dec.21, 1926	Dec.14, 1926	Nov.23, 1926	Dec.22, 1925
No. 2, fdy., Philadelphia...	\$22.76	\$22.76	\$23.26	\$23.76
No. 2, Valley furnace.....	18.50	19.00	19.00	20.50
No. 2, Southern, Cin'ti....	23.69	23.69	23.69	25.69
No. 2, Birmingham.....	20.00	20.00	20.00	22.00
No. 2 foundry, Chicago*	21.00	21.00	21.00	23.00
Basic, del'd eastern Pa....	22.00	22.00	23.00	23.00
Basic, Valley furnace.....	18.50	18.50	18.50	20.00
Valley Bessemer, del'd P'gh	21.76	21.76	21.76	22.76
Malleable, Chicago*	21.00	21.00	21.00	23.00
Malleable, Valley.....	19.00	19.00	19.00	20.50
Gray forge, Pittsburgh...	20.26	20.26	20.26	21.76
L. S. charcoal, Chicago...	27.04	27.04	27.04	29.04
Ferromanganese, furnace..	100.00	100.00	100.00	115.00

Rails, Billets, etc., Per Gross Ton:	Dec.21, 1926	Dec.14, 1926	Nov.23, 1926	Dec.22, 1925
O.-h. rails, heavy, at mill.	\$43.00	\$43.00	\$43.00	\$43.00
Light rails at mill.....	36.00	36.00	36.00	36.96
Bess. billets, Pittsburgh...	35.00	35.00	35.00	35.00
O.-h. billets, Pittsburgh...	35.00	35.00	35.00	35.00
O.-h. sheet bars, P'gh.....	36.00	36.00	36.00	36.00
Forging billets, P'gh.....	40.00	40.00	40.00	40.00
O.-h. billets, Phila.....	40.30	40.30	40.30	40.30
Wire rods, Pittsburgh...	45.00	45.00	45.00	45.00
	Cents	Cents	Cents	Cents
Skelp, grvd. steel, P'gh, lb.	1.90	1.90	1.90	1.90

Finished Iron and Steel,

Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Iron bars, Philadelphia...	2.22	2.22	2.22	2.22
Iron bars, Chicago.....	2.00	2.00	2.00	2.00
Steel bars, Pittsburgh...	2.00	2.00	2.00	2.00
Steel bars, Chicago.....	2.10	2.10	2.10	2.10
Steel bars, New York....	2.34	2.34	2.34	2.34
Tank plates, Pittsburgh...	1.90	1.90	1.90	1.90
Tank plates, Chicago.....	2.10	2.10	2.10	2.10
Tank plates, New York....	2.24	2.24	2.24	2.04
Beams, Pittsburgh.....	2.00	2.00	2.00	1.90
Beams, Chicago.....	2.10	2.10	2.10	2.10
Beams, New York.....	2.34	2.34	2.34	2.24
Steel hoops, Pittsburgh...	2.50	2.50	2.50	2.50

*The average switching charge for delivery to foundries in the Chicago district is 61c. per ton.

On export business there are frequent variations from the above prices. Also, in domestic business, there is at times a range of prices on various products, as shown in our market reports on other pages.

Sheets, Nails and Wire,	Dec.21, 1926	Dec.14, 1926	Nov.23, 1926	Dec.22, 1925
Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Sheets, black, No. 24, P'gh	3.00	3.00	3.00	3.20
Sheets, black, No. 24, Chi-				
cago dist. mill.....	3.20	3.20	3.20	3.30
Sheets, galv., No. 24, P'gh	3.85	3.85	3.85	4.15
Sheets, galv., No. 24, Chi-				
cago dist. mill.....	4.05	4.05	4.05	4.25
Sheets, blue, 9 & 10, P'gh	2.30	2.30	2.30	2.50
Sheets, blue, 9 & 10, Chi-				
cago dist. mill.....	2.50	2.50	2.50	2.60
Wire nails, Pittsburgh...	2.65	2.65	2.65	2.65
Wire nails, Chicago dist.				
mill.....	2.70	2.70	2.70	2.70
Plain wire, Pittsburgh...	2.50	2.50	2.50	2.50
Plain wire, Chicago dist.				
mill.....	2.55	2.55	2.55	2.55
Barbed wire, galv., P'gh...	3.35	3.35	3.35	3.35
Barbed wire, galv., Chi-				
cago dist. mill.....	3.40	3.40	3.40	3.40
Tin plate, 100 lb. box, P'gh	\$5.50	\$5.50	\$5.50	\$5.50

Old Material, Per Gross Ton:

Carwheels, Chicago.....	\$14.50	\$14.50	\$14.50	\$18.00
Carwheels, Philadelphia...	16.50	16.50	16.50	18.50
Heavy melting steel, P'gh.	16.50	17.00	17.00	19.00
Heavy melting steel, Phila.	15.50	15.50	15.50	17.50
Heavy melting steel, Ch'go	13.00	13.00	13.00	15.25
No. 1 cast, Pittsburgh...	16.00	16.00	16.00	17.50
No. 1 cast, Philadelphia...	17.00	17.00	17.00	18.00
No. 1 cast, Ch'go (net ton)	16.00	16.00	16.00	17.00
No. 1 RR. wrot., Phila....	17.00	17.00	17.00	18.50
No. 1 RR. wrot., Ch'go (net)	12.00	12.00	12.50	13.50

Coke, Connellsville, Per Net Ton at Oven:

Furnace coke, prompt....	\$3.50	\$3.50	\$4.25	\$5.00
Foundry coke, prompt....	4.50	4.50	5.00	5.50

Metals,

Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Lake copper, New York...	13.75	13.75	13.87½	14.25
Electrolytic copper, refinery	13.32½	13.37½	13.50	13.87½
Zinc, St. Louis.....	7.02½	7.05	7.17½	8.60
Zinc, New York.....	7.37½	7.40	7.52½	8.95
Lead, St. Louis.....	7.65	7.70	7.80	9.00
Lead, New York.....	7.80	7.90	8.00	9.25
Tin (Straits), New York...	68.00	68.62½	72.50	62.50
Antimony (Asiatic), N. Y.	13.00	13.00	14.00	22.00

Pittsburgh

Little Prospect for January Upturn in Steel Buying—Foundry Iron Weaker

PITTSBURGH, Dec. 21.—The prospect of a January upturn in steel business is dimmed by a continued tapering of demand. The short-term buying policy observed in recent years by consumers has made it possible for manufacturers to judge from the size of their orders during the last half of each month what may be expected in the way of production and shipments over the first half of the ensuing month. Last week was one of the quietest of the year, while the effect of the holidays on business this week is even more pronounced.

The movement of steel to the automotive industry this month and next will be heavier than it was in October and November, but no small part of the tonnage is represented in releases against suspended shipments and will be processed for cars to be built in February and March. No new buying of consequence has developed from that source and none is expected until the builders have clearer ideas as to what the spring demands are going to be. It is understood that the intensive new car sales of this industry have left the dealers with an unusually heavy stock of used cars, and there is also the matter of new models to keep the industry from swinging into volume production early in the year.

Structural steel business in this district has been decreasing rather steadily for the past 60 days, and the

demands of the oil and gas industry are not expected to amount to much until the approach of spring.

The bright spot is the large amount of railroad rolling stock business before the market. Much of this is yet to be placed, but the common belief is that the railroads would hardly have put out the inquiries unless they intended to buy. Rail business and the line pipe business now on mill books will take a considerable tonnage of steel and provide engagement for much capacity, but expansion in other avenues of outlet will be needed to bring about a January recovery in plant operations, which lately have been on a basis calling for an ingot output in this and nearby districts of 65 per cent of capacity. The output this week will suffer from the fact that there will be a general suspension from noon Friday until Sunday night. The more common expectation here is that the new year will get away to a rather slow start.

Prices generally are holding steadily, but then a real test of them has not been provided during this inventory and holiday period. Buyers are watching closely for evidence of weakness in bars and large shapes, but have not yet discovered any. The market in cold-rolled strip is no more settled now that it has been for some time, and the practice of Ohio mills of quoting f.o.b. mill is disturbing to outside mills seeking business in that State.

The pig iron market, at least so far as foundry iron, the principal merchant grade, is concerned, has begun to discount a reduction in coal mine and coke oven wages on Jan. 1, as the big inquiry for first quarter supplies from a sanitary ware manufacturer has brought out several quotations of \$18.50, Valley furnace, for No. 2 grade, as against \$19 recently asked.

At that, there is no certainty that wages at the mines and ovens will be cut on Jan. 1, as there are suggestions that the steel companies operating their own mines intend to maintain the high rate indefinitely, and possibly right through to April 1, in an effort to defeat the plans of the miners' union.

Pig Iron.—The market is no more active than it has been in point of sales, but at least business prospects are fairly bright, with the large tonnage wanted by the Standard Sanitary Mfg. Co. still pending. It was expected that this inquiry would establish the first quarter price on foundry iron, and it has. While one producer named \$19.50, Valley furnace, for the base grade, and others, \$19, the more common quotation has been \$18.50. No sale has been made, but definite offerings at that price make it part of the quotable market and the most likely basis of the next sizable transaction. The American Steel Foundries is in the market for 2000 to 3000 tons of basic iron for its recently acquired Verona, Pa., plant. There is a big stock of this grade on the yard of a furnace that has a freight rate to Verona of \$1.39 per ton, as compared with \$1.76 from Valley furnaces, and there are steel companies in the Pittsburgh district with surplus supplies of this grade that also have freight rates well below that from the Valley furnaces. The common quotation on basic is \$18.50, Valley furnace, but it is merely nominal. Small lots of Bessemer iron continue to move at \$20. One of the Donora, Pa., furnaces of the American Steel & Wire Co. was recently blown out for relining. It is now expected that the furnaces of the Stewart Furnace Co., Sharon, Pa., will be blown in about the middle of January; this furnace runs on low phosphorus iron.

We quote Valley furnace, the freight for delivery to the Cleveland or Pittsburgh district being \$1.76 per gross ton:

Basic	\$18.50
Bessemer	20.00
Gray forge	18.50
No. 2 foundry	\$18.50 to 19.00
No. 3 foundry	18.00 to 18.50
Malleable	19.00
Low phosphorus, copper free	28.00

Ferroalloys.—In this paragraph a week ago it was stated that the New Jersey Zinc Co. had opened its books on spiegeleisen for the first half of 1927, naming the same prices as have ruled during most of this year. This statement is misleading, the company advises, since its books are always open for business. It contracts at any time for the period of time and tonnage desired by the buyer, and prices are dependent on those factors. The New Jersey Zinc Co. publishes only carload prices for spiegeleisen. Going prices on carload lots are \$37, furnace, for 19 to 21 per cent, and \$36 for 16 to 19 per cent material. Some of the large users of ferromanganese in this district are still postponing covering their requirements for the first half of the year. Producers, however, view this delay as merely the result of the fact that consumers have specified very freely against their requirement contracts for this year and have stocks sufficient to carry them through the early part of the new year. Actually, \$100, seaboard, is holding well both on domestic and British material, and the idea entertained a short

time ago that the British producers, in naming a price of \$100, were merely advising the American trade that they would make an effort to regain lost business, is fading, especially as they recently raised their domestic prices \$5 a ton. Users of 50 per cent ferrosilicon do not seem to be in a hurry about covering for next year, but a fair amount of business has been done. Prices are given on page 1787.

Semi-Finished Steel.—More interest is apparent in supplies of billets, slabs and sheet bars for early 1927 shipment, but actual business is still light, as inquiries as yet are related more to possible than known requirements. Such business as has been closed is subject to future release, as consumers generally have stocks sufficient to carry them through the early part of January. Prices are the same as the buyers have been paying over the past six months. There is only a moderate demand for wire rods, and with pipe mill operations at the lowest notch in several months, specifications for pipe skelp are light. Prices are given on page 1787.

Wire Products.—Business is quiet, as it usually is at this time of year, but leading makers find that shipments so far this month have not been far behind the monthly average for the year to the end of November. Advance business, orders calling for definite shipment after Jan. 1, is of fair volume only, as is perhaps only natural, in view of the fact that there is no question as to the ability of the mills to meet all demands and do so promptly, while there is nothing to suggest that prices will be higher. The market is steady because prices are too close to costs to permit competition. Moreover, it is not believed that the market could be broadened by lower prices.

Rails and Track Supplies.—Mills in this territory are well supplied with standard-section rail business, and there are reasonably large order books in the track accessories. Production is expanding in preparation for larger shipments after Jan. 1. Light-section rails are only moderately active, as some prospective business has been lost through the inability of a number of mines to continue in operation on the advanced wage scale and the prices obtainable for coal. Prices of light-section rails are well maintained, and the market is steady on spikes, tie plates, etc.

Tubular Goods.—Standard-weight pipe, which embraces chiefly the butt-welded sizes, is slow, and demand for oil country goods is very light as compared with that of the early fall, but there is a fair demand for small tonnages of line pipe, as well as the promise that some long lines that have been projected will be placed after the turn of the new year. Pipe mill operations are at about 70 per cent of capacity, but that means a much larger tonnage than as recently as 1925, since in the interim capacity has increased fully 30 per cent, taking in the seamless mill installations. Present demand could be supplied with less engagement of productive capacity, but mill stocks were well reduced in the fall and are now being replenished. Mechanical tubing is doing better as a result of releases by the motor car builders for steering columns and axle housings.

THE IRON AGE Composite Prices

Finished Steel

Dec. 21, 1926, 2.453c. Per Lb.

One week ago.....	2.453c.
One month ago.....	2.453c.
One year ago.....	2.453c.
10-year pre-war average.....	1.689c.

Based on steel bars, beams, tank plates, plain wire, open-hearth rails, black pipe and black sheets. These products constitute 87 per cent of the United States output of finished steel.

High		Low	
1926	2.453c., Jan. 5;	2.403c.,	May 18
1925	2.560c., Jan. 6;	2.396c.,	Aug. 18
1924	2.789c., Jan. 15;	2.460c.,	Oct. 14
1923	2.824c., April 24;	2.446c.,	Jan. 2

Pig Iron

Dec. 21, 1926, \$19.88 Per Gross Ton

One week ago.....	\$19.96
One month ago.....	20.13
One year ago.....	21.79
10-year pre-war average.....	15.72

Based on average of basic iron at Valley furnace and foundry irons at Chicago, Philadelphia, Buffalo, Valley and Birmingham.

High		Low	
1926	\$21.54, Jan. 5;	\$19.46,	July 13
1925	22.50, Jan. 13;	18.96,	July 7
1924	22.88, Feb. 26;	19.21,	Nov. 3
1923	30.86, March 20;	20.77,	Nov. 20

Mill Prices of Finished Iron and Steel Products

Iron and Steel Bars

Soft Steel

	Base Per Lb.
F.o.b. Pittsburgh mills.....	2.00c. to 2.10c.
F.o.b. Chicago	2.10c.
Del'd Philadelphia	2.32c.
Del'd New York	2.34c.
Del'd Cleveland	2.19c.
F.o.b. Cleveland, sizes up to 1-in. rounds ..	2.00c.
F.o.b. Birmingham	2.15c. to 2.25c.
C.i.f. Pacific ports	2.35c.
F.o.b. San Francisco mills.....	2.35c. to 2.40c.

Billet Steel Reinforcing

F.o.b. Pittsburgh mills.....	2.00c. to 2.10c.
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Rail Steel

F.o.b. mill	1.80c. to 1.90c.
F.o.b. Chicago	1.90c. to 2.00c.

Iron

Common iron, f.o.b. Chicago.....	2.00c.
Refined iron, f.o.b. P'gh mills.....	2.90c. to 3.00c.
Common iron, del'd Philadelphia.....	2.22c.
Common iron, del'd New York.....	2.24c.

Tank Plates

	Base Per Lb.
F.o.b. Pittsburgh mill.....	1.90c.
F.o.b. Chicago	2.10c.
F.o.b. Birmingham	2.05c. to 2.15c.
Del'd Cleveland	2.09c.
Del'd Philadelphia	2.22c.
Del'd New York	2.24c.
C.i.f. Pacific ports	2.30c.

Structural Shapes

	Base Per Lb.
F.o.b. Pittsburgh mill.....	2.00c. to 2.10c.
F.o.b. Chicago	2.10c.
F.o.b. Birmingham	2.15c. to 2.25c.
Del'd Cleveland	2.19c.
Del'd Philadelphia	2.22c. to 2.32c.
Del'd New York	2.34c.
C.i.f. Pacific ports	2.35c.

Hot-Rolled Flats (Hoops, Bands and Strips)

	Base Per Lb.
All gages, narrower than 6 in., P'gh.....	2.50c.
All gages, 6 in. and wider, P'gh.....	2.30c.
All gages, narrower than 6 in., Chicago,	2.50c. to 2.60c.
All gages, 6 in. and wider, Chicago.....	2.50c.

Cold-Finished Steel

	Base Per Lb.
Bars, f.o.b. Pittsburgh mills.....	2.30c. to 2.40c.
Bars, f.o.b. Chicago.....	2.40c.
Bars, Cleveland	2.45c.
Shafting, ground, f.o.b. mill.....	2.55c. to 3.00c.
Strips, f.o.b. Pittsburgh mills.....	3.00c. to 3.40c.
Strips, f.o.b. Cleveland mills.....	3.00c. to 3.40c.
Strips, delivered Chicago.....	3.30c. to 3.70c.
Strips, f.o.b. Worcester mills.....	3.75c.

*According to size.

Wire Products

(To jobbers in car lots, f.o.b. Pittsburgh and Cleveland)

	Base Per Keg
Wire nails	\$2.65
Galv'd nails, 1-in. and longer.....	4.65
Galv'd nails, shorter than 1-in.....	4.90
Galvanized staples	3.35
Polished staples	3.10
Cement coated nails	2.65

Base Per 100 Lb.

Bright plain wire, No. 9 gage.....	\$2.50
Annealed fence wire.....	2.65
Spring wire	3.50
Galv'd wire, No. 9.....	3.10
Barbed wire, galv'd	3.35
Barbed wire, painted.....	3.10

Chicago district mill and delivered Chicago prices are \$1 per ton above the foregoing. Birmingham mill prices \$3 a ton higher; Worcester, Mass., mill \$3 a ton higher on production of that plant; Duluth, Minn., mill \$2 a ton higher; Anderson, Ind., \$1 higher.

Woven Wire Fence

	Base to Retailers Per Net Ton
F.o.b. Pittsburgh	\$65.00
F.o.b. Cleveland	65.00
F.o.b. Anderson, Ind.	65.00
F.o.b. Chicago district mills.....	67.00
F.o.b. Duluth	63.00
F.o.b. Birmingham	63.00

Sheets

Blue Annealed

	Base Per Lb.
Nos. 9 and 10, f.o.b. Pittsburgh.....	2.25c. to 2.40c.
Nos. 9 and 10, f.o.b. Ch'go dist. mill.....	2.50c.
Nos. 9 and 10, del'd Philadelphia.....	2.57c. to 2.72c.
Nos. 9 and 10, f.o.b. Birmingham.....	2.60c. to 2.70c.

Box Annealed, One Pass Cold Rolled

No. 24, f.o.b. Pittsburgh.....	2.90c. to 3.10c.
No. 24, f.o.b. Ch'go dist. mill.....	3.20c.
No. 24, del'd Philadelphia.....	3.22c. to 3.32c.
No. 24, f.o.b. Birmingham.....	3.30c. to 3.40c.

Metal Furniture Sheets

No. 24, f.o.b. Pittsburgh, A grade.....	4.25c.
No. 24, f.o.b. Pittsburgh, B grade.....	4.10c.

Galvanized

No. 24, f.o.b. Pittsburgh.....	3.85c. to 3.95c.
No. 24, f.o.b. Chicago dist. mill.....	4.05c.
No. 24, del'd Philadelphia.....	4.17c. to 4.32c.
No. 24, f.o.b. Birmingham.....	4.20c. to 4.30c.

Tin Mill Black Plate

No. 28, f.o.b. Pittsburgh.....	3.10c. to 3.25c.
No. 28, f.o.b. Chicago dist. mill.....	3.25c. to 3.35c.

Automobile Body Sheets

No. 20, f.o.b. Pittsburgh.....	4.25c.
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Long Ternes

No. 24, 8-lb. coating, f.o.b. mill.....	4.30c.
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Tin Plate

	Per Base Box
Standard cokes, f.o.b. P'gh district mills.....	\$5.50
Standard cokes, f.o.b. Gary and Elwood, Ind.	5.60

Terne Plate

(F.o.b. Morgantown or Pittsburgh)

(Per package, 20 x 28 in.)

8-lb. coating, 100 lb. base	\$11.40
20-lb. coating I.C.	\$16.20
25-lb. coating I.C.	17.90
8-lb. coating I.C. 11.70	30-lb. coating I.C. 19.45
15-lb. coating I.C. 14.85	40-lb. coating I.C. 21.65

Alloy Steel Bars

(F.o.b. Pittsburgh or Chicago)

S. A. E. Series Numbers	Base Per 100 Lb.
2100* (½% Nickel, 0.10% to 0.20% Carbon)	\$3.20 to \$3.25
2300 (¾% Nickel)	4.35 to 4.50
2500 (5% Nickel)	5.50 to 5.65
3100 (Nickel Chromium)	3.40 to 3.50
3200 (Nickel Chromium)	5.00 to 5.25
3300 (Nickel Chromium)	7.00 to 7.25
3400 (Nickel Chromium)	6.25 to 6.50
5100 (Chromium Steel)	3.40 to 3.50
5200* (Chromium Steel)	7.00 to 7.50
6100 (Chrom. Vanadium bars).....	4.30
6100 (Chrom. Vanad. spring steel).....	3.80
9250 (Silicon Manganese spring steel)	3.20 to 3.25
Carbon Vanadium (0.45% to 0.55% Carbon, 0.15% Vanad.).....	4.10 to 4.20
Nickel Chrome Vanadium (0.60 Nickel, 0.50 Chrom., 0.15 Vanad.) ..	4.30
Chromium Molybdenum bars (0.80—1.10 Chrom., 0.25—0.40 Molyb.)..	4.25 to 4.35
Chromium Molybdenum bars (0.50—0.70 Chrom., 0.15—0.25 Molyb.)..	3.40 to 3.50
Chromium Molybdenum spring steel (1—1.25 Chrom., 0.30—0.50 Molybdenum)	4.50 to 4.75

Above prices are for hot-rolled steel bars, forging quality. The ordinary differential for cold-drawn bars is 1c. per lb. higher. For billets 4 x 4 to 10 x 10 in. the price for a gross ton is the net price for bars of the same analysis. For billets under 4 x 4 in. down to and including 2½-in. squares, the price is \$5 a gross ton above the 4 x 4 billet price.

*Not S. A. E. specifications, but numbered by manufacturers to conform to S. A. E. system.

Rails

	Per Gross Ton
Standard, f.o.b. mill.....	\$43.00
Light (from billets), f.o.b. mill..	36.00
Light (from rail steel), f.o.b. mill	34.00
Light (from billets), f.o.b. Ch'go mill	\$36.00 to 38.00

Track Equipment

(F.o.b. Mill)

	Base Per 100 Lb.
Spikes, ¾ in. and larger.....	\$2.80 to \$3.00
Spikes, ½ in. and smaller.....	2.90 to 3.25
Spikes, boat and barge.....	3.25
Track bolts, all sizes.....	3.90 to 4.50
Tie plates, steel.....	2.95
Angle bars	2.75

Welded Pipe

Base Discounts, f.o.b. Pittsburgh District and Lorain, Ohio, Mills

Butt Weld			
Inches	Steel	Galv.	Iron
1/8	45	19 1/2	1/4 to 3/8 +11 +39
1/4	51	25 1/2	1/2 22 2
3/8	56	42 1/2	3/4 28 11
1/2	60	48 1/2	1 to 1 1/2.. 30 12
3/4	62	50 1/2	
1 to 3.....			
Lap Weld			
2	55	43 1/2	2 23 7
2 1/2 to 6..	59	47 1/2	2 1/2 26 11
7 and 8..	56	43 1/2	3 to 6..... 28 13
9 and 10..	54	41 1/2	7 to 12... 26 11
11 and 12.	53	40 1/2	

Butt Weld, extra strong, plain ends

1/8	41	24 1/2	1/4 to 3/8 +19 +54
1/4	47	30 1/2	1/2 21 7
3/8	53	42 1/2	3/4 28 12
1/2	58	47 1/2	1 to 1 1/2.. 30 14
3/4	60	49 1/2	
1 to 1 1/2..	61	50 1/2	
2 to 3.....			

Lap Weld, extra strong, plain ends

2	53	42 1/2	2 23 9
2 1/2 to 4..	57	46 1/2	2 1/2 to 4.. 29 15
4 1/2 to 6..	56	45 1/2	4 1/2 to 6.. 28 14
7 to 8.....	52	39 1/2	7 to 8..... 21 7
9 and 10..	45	32 1/2	9 to 12... 16 2
11 and 12.	44	31 1/2	

To the large jobbing trade the above discounts on steel pipe are increased on black by one point, with supplementary discount of 5%, and on galvanized by 1½ points, with supplementary discount of 5%. On iron pipe, both black and galvanized, the above discounts are increased to large jobbers by one point with supplementary discounts of 5 and 2½%.

Note.—Chicago district mills have a base two points less than the above discounts. Chicago delivered base is 2½ points less. Freight is figured from Pittsburgh, Lorain, Ohio, and Chicago district mills, the billing being from the point producing the lowest price to destination.

Boiler Tubes

Base Discounts, f.o.b. Pittsburgh

Lap Welded Steel		Charcoal Iron	
2 to 2 1/4 in.....	27	1 1/4 in.....	+18*
2 1/4 to 2 3/4 in..	37	1 3/4 to 1 3/8 in..	+ 8
3 in.....	40	2 to 2 1/4 in.....	2
3 1/4 to 3 3/4 in..	42 1/2	2 1/4 to 3 in.....	7
4 to 13 in.....	46	3 1/4 to 4 1/2 in..	9

Beyond the above discounts, 5 to 7 fives extra are given on lap welded steel tubes and 2 tens to 2 tens and 1 five on charcoal iron tubes.

Standard Commercial Seamless Boiler Tubes

Cold Drawn	
1 in.....	60
1 1/4 to 1 1/2 in..	52
1 3/4 in.....	36
2 to 2 1/4 in.....	31
2 1/4 to 2 3/4 in..	39
3 in.....	48
3 1/4 in.....	45
3 3/4 in.....	47
4 in.....	50
4 1/2, 5 and 6 in.	46

Hot Rolled

2 and 2 1/4 in..	34	3 1/4 and 3 1/2 in..	50
2 1/4 and 2 3/4 in..	42	4 in.....	53
3 in.....	48	4 1/2, 5 and 6 in..	48

Less carloads, 4 points less. Add \$8 per net ton for more than four gages heavier than standard. No extra for lengths up to and including 24 ft. Sizes smaller than 1 in. and lighter than standard gage to be held at mechanical tube list and discount. Intermediate sizes and gages not listed take price of next larger outside diameter and heavier gage.

Seamless Mechanical Tubing

	Per Cent Off List
Carbon, 0.10% to 0.30%, base.....	55
Carbon, 0.30% to 0.40%, base.....	50
Plus differentials for lengths over 15 ft. and for commercially exact lengths. Warehouse discounts on small lots are less than the above.	

Boiler tubes are moving slowly. Discounts are given on page 1785.

Sheets.—The market shows no improvement as to prices, but business is slightly better with mills in this area, although the improvement is related chiefly to orders for shipment after the turn of the year, and embraces more tonnage in automobile body sheets than in the common finishes. Outside of some of the Ohio consuming points, local mills regard the market as not under 3c., base Pittsburgh, for black; 3.85c., base, for galvanized, and 2.30c., base, for blue annealed. A number of Ohio mills are quoting f.o.b. mill instead of f.o.b. Pittsburgh, but it is said that reported sales of black sheets at 2.90c., base Pittsburgh, in northern Ohio refer to full finished sheets on which the extras have been shaded rather than to sales of ordinary one-pass, cold-rolled, box-annealed black sheets. Mill operations were under 70 per cent last week and are expected to be even lower this week, as the mill crews will hardly wait until Saturday to begin observance of the holiday.

Tin Plate.—The run of the American Sheet & Tin Plate Co. at 100 per cent of capacity lasted until Dec. 16, when two mills went down and were idle for two days. They are back on this week. Production of the company has been at or above 100 per cent of rated capacity since Dec. 1. Independent mills also are doing well because of the standardization of packers' cans, which permits production of tin plate in advance of specifications.

Cold-Finished Steel Bars and Shafting.—Orders and specifications are heavier this month than they were last month to the same date. This is due chiefly to releases by automobile parts makers for January shipment. But business is far from active, and it is not believed that automobile production will expand enough to bring really sizable orders from that source until after the January automobile shows. No small part of the tonnage moving in the next 30 days will be for processing for the February and March production of cars. Most makers are holding firmly to 2.40c., base Pittsburgh, for ordinary tonnages, but a few small makers continue to take business at 2.30c.

Hot-Rolled Flats.—Grating is furnishing an increasing outlet for bands in the narrow widths, local mills benefiting by the fact that Pittsburgh now has two makers of that product. General business in flats is rather slow, despite the fact that automobile parts makers have released a fair amount of tonnage for January shipment. No deviations from ruling quotations are noted.

Bolts, Nuts and Rivets.—There is a fair demand for bolts and nuts from jobbers, but big consuming industries are still buying cautiously. Jobbers are disturbed over a proposal of manufacturers to set up quantity price differentials and are disposed to resist it. There continues to be some quoting of the carload discounts on less-than-carload lots. The rivet market is still unsettled and easy, and for large lots of large rivets, either structural or boiler, the ruling price is \$2.40, base, per 100 lb., Pittsburgh.

Steel and Iron Bars.—Specifications for hot-rolled

bars from cold-finished steel bar makers are running heavier, but the market as a whole is still very quiet and there is no longer much attempt to get more than 2c., base, even on what hitherto would have been classed as undesirable orders.

Structural Steel.—Local fabricating shops are still finding new business to be running behind completed orders and are not very actively seeking supplies of plain material. The market for ordinary tonnages is still quotable at 2c., base Pittsburgh, with large tonnages, as usual, subject to special consideration.

Plates.—Business is better in this product than in bars or shapes, as there is considerable barge and tank business and a fair amount of large-diameter pipe to furnish specifications. There are no suggestions of a lower price than 1.90c., base Pittsburgh.

Cold-Rolled Strips.—The effort to find a trading level of prices continues, but there is too little business to furnish a real test. The market continues quotable from 3c., for large lots, to 3.40c., base Pittsburgh, for the small tonnages.

Coke and Coal.—Interest in the market still centers in the wage question. Pig iron producers expect that their sources of coke supplies will reduce wages to the November, 1917, scale on Jan. 1, and thus relieve them of a burden they have found the users of pig iron unwilling to share. The steel companies with coal mines, however, seem disinclined to make any change in wages for the present, and so long as they can provide work for the men and pay the higher scale, the merchant operators would invite trouble in making a reduction. Standard furnace coke is still quotable at \$3.50 per net ton at ovens, although coke somewhat under standard quality, which would find a market if the supply was short, has been selling as low as \$3.25. Foundry coke also is holding at recent levels. In both grades light production, rather than big demands, accounts for the price steadiness. On first quarter furnace coke the quotations are \$3.25 on the low wage scale and \$4 on the high scales.

Old Material.—There is almost no consumer interest in the steel works grades, and current offerings find no broad outlet except to dealers with orders to cover. There is no urgency to that demand, and dealers' bids on heavy melting steel range from \$16.25 to \$16.75, depending on the destination. Generally, not much of this grade has to be sold at under \$16.50, while consumers report no offerings at less than \$17. The quotable market is \$16.50 to \$17, with the preponderance of current sales, principally to dealers, at the lower figure.

We quote for delivery to consumers' yards in the Pittsburgh and other districts taking the Pittsburgh freight rate as follows:

Per Gross Ton

Heavy melting steel.....	\$16.50 to \$17.00
Scrap rails	16.00 to 16.50
No. 1 cast, cupola size.....	16.00 to 16.50
Compressed sheet steel.....	15.50 to 16.00
Bundled sheets, sides and ends..	14.50 to 15.00
Railroad knuckles and couplers..	18.50 to 19.00
Railroad coil and leaf springs...	18.50 to 19.00
Low phosphorus blooms and bl- let ends	21.00 to 21.50
Low phosphorus mill plates.....	20.50 to 21.00
Low phosphorus, light grade.....	17.50 to 18.00
Low phosphorus punchings.....	18.50 to 19.00
Steel car axles.....	21.50 to 22.00
Cast iron wheels.....	16.00 to 16.50
Rolled steel wheels.....	18.50 to 19.00
Machine shop turnings.....	11.25 to 11.75
Short shoveling steel turnings...	12.50 to 13.00
Sheet bar crops.....	17.00 to 17.50
Heavy steel axle turnings.....	15.00 to 15.50
Short mixed borings and turnings	12.00 to 12.50
Heavy breakable cast.....	15.00 to 15.50
Cast iron borings.....	12.00 to 12.50
No. 1 railroad wrought.....	13.00 to 13.50
No. 2 railroad wrought.....	16.50 to 17.00
Railroad or automobile malleable scrap	16.50 to 17.00

Warehouse Prices, f.o.b. Pittsburgh

	Base per Lb.
Tank plates.....	3.00c.
Structural shapes	3.00c.
Soft steel bars and small shapes.....	2.90c.
Reinforcing steel bars.....	2.90c.
Black sheets (No. 24 gage), 25 or more bundles	3.95c.
Galvanized sheets (No. 24 gage), 25 or more bundles	4.70c.
Blue annealed sheets (No. 10 gage), 25 or more sheets	3.40c.
Cold-finished shafting and screw stock— Rounds and hexagons.....	3.60c.
Squares and flats	4.10c.
Bands	3.60c.
Spikes, large	3.30c.
Small	3.80c. to 5.25c.
Boat	3.80c.
Bolts, track	4.90c.
Wire, black soft annealed, base per 100 lb.	\$3.00
Wire, galvanized soft, base per 100 lb....	3.00
Common wire nails, per keg.....	3.00
Cement coated nails, per keg.....	3.05

The National Conference of Building Trades Employers at a conference at Pittsburgh, Dec. 13, went on record "against and will resist by every lawful means, the adoption of the five-day week in the building industry, as being unjustified by any requirement, either physical, mental, or spiritual, and as placing an additional burden on an already overburdened industry."

Chicago

Railroads Place Orders for 1700 Cars and 35,000 Tons of Track Steel

CHICAGO, Dec. 21.—Orders and specifications for light finished steel products are more numerous as users become concerned regarding small stocks on hand. For the most part, this tonnage is to be shipped at the end of this year so that it will be delivered and billed soon after Jan. 1. The most active demand is for soft steel bars and sheets from the general manufacturing trade, but jobbers in outlying districts are also finding that present stocks are not large enough to meet expected requirements after the turn of the year.

Specifications for all finished steel products, with the exception of rails, show a substantial gain this week, and they are now slightly ahead of shipments. New buying, while more active, includes only a small proportion of future tonnage and, on the whole, still lags well behind specifications.

Pending structural projects, which represent a good total tonnage, are slow at being placed. The Great Lakes Construction Co., Chicago, is low bidder, at \$4,672,000 for the addition to the Cook County jail, which will require about 4000 tons of structural material. Railroad buying is active, both in track supplies and rolling stock. Purchases of track accessories this week total 30,000 tons, and new contracts for standard-section rails aggregate not less than 5000 tons. The Santa Fe is in the market for 1000 refrigerator cars. The Rock Island has placed 35 locomotives with the American Locomotive Co. at a price said to be close to \$2,500,000. Railroad cars purchased in this territory total 1250 for the week.

Pig Iron.—The pig iron market is steady but quieter than a week ago. Shipments for the holiday period continue to taper off, but release orders and specifications are more generous for tonnage to be billed and delivered shortly after the first of the year. A melter in Milwaukee has taken 500 tons of malleable at \$21, Chicago furnace. Two Chicago melters are in the market for a total of 700 tons of foundry iron. About 1000 tons of basic iron has been sold at \$20, Chicago furnace. This was taken by a user in southern Wisconsin. Large inquiries, which will not come into this market, include 5000 to 6000 tons of basic iron for the American Steel Foundries and 18,000 tons of foundry iron for the Standard Sanitary Mfg. Co.

Quotations on Northern foundry, high phosphorus and malleable iron are f.o.b. local furnace, and do not include an average switching charge of 61c. per ton. Other prices are for iron delivered at consumers' yards:

Northern No. 2 foundry, sil. 1.75 to 2.25	\$21.00
Northern No. 1 foundry, sil. 2.25 to 2.75	21.50
Malleable, not over 2.25 sil.	21.00
High phosphorus	21.00
Lake Superior charcoal, averaging sil. 1.50, delivered at Chicago	27.04
Southern No. 2 (all rail)	26.01
Southern No. 2 (barge and rail)	24.18
Low phos., sil. 1 to 2 per cent, copper free	\$31.50 to 32.50
Silvery, sil. 8 per cent.	33.29
Bessemer ferrosilicon, 14 to 15 per cent	46.79

Plates.—Western car builders have taken orders for 1700 cars, which will require close to 20,000 tons of plates, shapes and bars. The Chicago, Milwaukee & St. Paul placed 500 automobile cars with the Pullman Car & Mfg. Corporation and 500 stock cars with the Bettendorf Co. Another Western railroad placed 700 cars with an unnamed builder. Although formal inquiry has not been made by the Illinois Central, it is generally understood that car builders are now figuring on 4000 cars for that railroad. Its budget, however, calls for 9200 cars. After deducting car tonnage placed with the mills this week, there is still fully 350,000 tons either actually on inquiry or in sight. The Santa Fe has now come into the market for 1000 refrigerator cars, bringing the total freight car inquiries of that railroad up to 2950 cars. Plate mills in the Chicago

district are operating close to 65 per cent of capacity, which is an indication that most users, with the exception of car builders, are specifying normal tonnages for this time of the year. Deliveries on plates are prompt; orders are being taken on which shipping dates are not more than seven to 12 days in advance. Tank builders are well supplied with work and at present are the largest individual users of plates in Western territory. An oil producer in the Southwest has placed a tank order requiring 1000 tons, and a California refiner is in the market for 2000 tons of tankage. The Chicago price on plates is steady at 2.10c., but local producers are forced to cut that price for business that they take in the Southwest.

The mill quotation on plates is 2.10c. per lb., base, Chicago.

Ferroalloys.—This market is quiet, with exception that a few first half contracts for ferromanganese are being placed. The contract price is \$100, seaboard, but a few carlot sales for immediate delivery are reported at \$95, seaboard. These small orders are being shipped from New Orleans, where a few hundred tons of the German product are available.

We quote 80 per cent ferromanganese, \$107.56, delivered Chicago; 50 per cent ferrosilicon, \$85, delivered; spiegeleisen, 18 to 22 per cent, \$44.56, delivered Chicago.

Structural Material.—This has been another quiet week in the building industry. Foundation work for the State Bank of Chicago is well under way, and plans for the superstructure have been in the hands of fabricators for about two weeks. It is generally anticipated that the contract will be let at an early date. Bidders have been told that the award of 4000 tons for the Woodlawn Theater and Hotel will not be made before Jan. 10, but the projected addition to the Cook County Jail is active and shops expect the contract to be placed before the turn of the year. The Hepburn Building at Louisville, Ky., is out for figures, and preliminary estimates show that it will require close to 4000 tons. Fabricators in the immediate Chicago territory are operating at 75 per cent of capacity and on that basis have about four weeks of work ahead of them. Shops in outlying districts, particularly to the East and Southeast, are operating at close to 80 per cent of capacity and have bookings that will carry them until well toward the latter part of February. Outstanding inquiry is large and practically unchanged from the total of two weeks ago. As a result, the market retains a fair degree of firmness. Actual purchases and specifications for plain material are light, although better than at this time a year ago.

The mill quotation on plain material is 2.10c. per lb. base, Chicago.

Bars.—Users of soft steel bars, having allowed inventories to run low as the year nears its end, are now looking ahead to their requirements after Jan. 1. Specifications to mills for deliveries early in the new year show a decided upturn, and in this respect December gives some promise of being equal to or slightly better than November. The most noticeable increase in demand comes from the general manufacturing trade, but jobbers in outlying territory are also finding that their requirements are in excess of earlier estimates. The iron bar market is quiet, except for the placing of several first quarter contracts which were taken at 2c., Chicago. Orders during the past two or three weeks have been light and mill operations are not far from the low point of the year. The alloy steel bar market, which closely follows the demand of the automotive trade, is quiet except that more interest is being shown in first quarter contracts, a few having been signed. Rail steel bars have failed to gain strength, and quotations remain 1.90c., Chicago, for desirable tonnages, and 2c. for small lots. The demand for this commodity for concrete reinforcing is falling off, shipments now being only 70 per cent of the average rate maintained in November. Rail steel bar production has already passed the total for 1925, and so 1926 goes on record as one of the best years in the history of local mills.

Mill prices per lb. are: Mild steel bars, 2.10c., base, Chicago; common bar iron, 2c. base, Chicago; rail steel bars, 1.90c. to 2c., base, Chicago.

Rails and Track Supplies.—Contracting for track supplies continues heavy, the total for the week being 30,000 tons, which represents the purchases of four railroads with terminals in Chicago. About 16,000 tons of accessories is still on inquiry. Of 12,000 tons of track supplies purchased by the Pennsylvania this week, not less than 65 per cent was taken by Chicago district mills. Two small Western railroads have come into the market for standard-section rails, one ordering 3500 tons and the other 1000 tons. Light rails are not in active demand, sales being of carlot proportions. Rail mill operations are steady at 75 per cent, but producers are looking forward to an expansion of production shortly after Jan. 1.

Standard Bessemer and open-hearth rails, \$43; light rails, rolled from billets, \$36 to \$38 per gross ton, f.o.b. maker's mill.

Standard railroad spikes, 2.90c. per lb. mill; track bolts with square nuts, 3.90c. mill; steel tie plates, 2.35c. mill; angle bars, 2.75c. mill.

Cast Iron Pipe.—Prices of pipe are lower, and the market is dull except for a fair number of orders that average well below 100 tons each. Quotations on attractive business are at \$38, base Birmingham, and for small tonnages \$39 is being asked. The freight rate to Chicago is \$8.20 per ton, bringing the delivered price range to \$46.20 to \$47.20 for 6-in. and larger diameters. Detroit has placed 1800 tons of centrifugal pipe, 1200 tons going to the United States Cast Iron Pipe & Foundry Co., and 600 tons to the American Cast Iron Pipe Co.

We quote per net ton, delivered, Chicago, as follows: Water pipe, 4-in., \$50.20 to \$51.20; 6-in. and over, \$46.20 to \$47.20; Class A and gas pipe, \$4 extra.

Sheets.—Sheet prices in the Chicago district are holding steady on the general run of small orders, which are more numerous than at any time earlier in the month. Forward contracting is sluggish, and the market lacks a real test. Incoming tonnage to mills is on the basis of 50 per cent short orders and 50 per cent specifications against previous contracts. With deliveries ranging from two to five weeks, depending upon the nature of the product, current orders and releases are for delivery after the turn of the year. The increased demand this week has led mills to revise their plans for the holiday shutdown, and schedules now call for not more than three or four non-productive days between now and Jan. 2.

Chicago delivered prices from mill are 3.25c. for No. 24 black; 2.55c. for No. 10 blue annealed; 4.10c. for No. 24 galvanized. Delivered prices at other Western points are equal to the freight from Gary plus the mill prices, which are 5c. per 100 lb. lower than the Chicago delivered prices.

Wire Products.—December shipments of wire products are falling behind those of November, but the decline is not large. Forward contracting is slow, but producers have hopes that this situation will change since inquiry is more active. Specifications from the

railroads are in good volume, but the requirements of the general manufacturing trade are lighter. The jobbing trade is spotty, and reports vary widely as to its state of activity.

Bolts, Nuts and Rivets.—Specifications, on the whole, are steady and indicate that about 85 per cent of the minimum tonnage called for on fourth quarter contracts will have been taken by users up to the first of January. A few carload buyers have entered specifications for delivery in the early part of the new year. The immediate requirements of railroads are lighter, but the implement makers have sent through larger specifications in the last few days. First quarter contracting is meeting with little or no resistance from small users, but large buyers are inclined to hold back and to await further assurance that present quotations will hold during the early part of the new year.

Reinforcing Bars.—Cold weather has interfered with concrete construction work, and shipments from warehouses are at least temporarily in smaller volume. New awards are light, and prices are weak because of keen competition. For projects calling for more than 100 tons each, billet steel bars are being quoted at 2.25c. per lb., Chicago warehouse, and there are reports of sales at lower prices. Lots up to 25 tons bring about 2.60c. per lb., and from 25 to 100 tons, 2.30c. to 2.45c. Recent awards and fresh inquiries are shown on page 1798.

Old Material.—The market is quiet except for activity on the part of dealers who are trying to cover short orders. Brokers who have stocks or shipments due from railroads are not inclined to make heavy sales, but prefer to take a larger number of small-tonnage orders. This is making it increasingly difficult for sellers with contracts to cover old orders, and in some instances trading among dealers is at or above the prices recently paid by consumers. There has been no test of the heavy melting steel market, although a small purchase made by a user at \$13.50 per gross ton, delivered, would indicate that this grade is showing some strength. A round tonnage of rerolling rails has been taken by a mill at \$16.25 per gross ton, delivered.

We quote delivered in consumers' yards, Chicago and vicinity, all freight and transfer charges paid for all items, except relaying rails, including angle bars to match, which are quoted f.o.b. dealers' yards:

Per Gross Ton

Heavy melting steel.....	\$13.00 to \$13.50
Frogs, switches and guards, cut apart, and miscellaneous rails.	14.50 to 15.00
Shoveling steel	13.00 to 13.50
Hydraulic compressed sheets....	11.50 to 12.00
Drop forge flashings.....	9.50 to 10.00
Forged cast and rolled steel car-wheels	16.50 to 17.00
Railroad tires, charging box size.	17.50 to 18.00
Railroad leaf springs, cut apart..	16.50 to 17.00
Steel couplers and knuckles.....	15.50 to 16.00
Coil springs	17.25 to 17.75
Low phosphorus punchings.....	15.50 to 16.00
Axle turnings, foundry grade....	13.00 to 13.50
Axle turnings, blast fur. grade..	11.00 to 11.50
Relaying rails, 56 to 60 lb.....	25.50 to 26.50
Relaying rails, 65 lb. and heavier	26.00 to 31.00
Rerolling rails	16.00 to 16.50
Steel rails, less than 3 ft.....	16.25 to 16.75
Iron rails	13.50 to 14.00
Cast iron borings.....	9.50 to 10.00
Short shoveling turnings.....	9.50 to 10.00
Machine shop turnings.....	6.50 to 7.00
Railroad malleable	16.00 to 16.50
Agricultural malleable	15.00 to 15.50
Angle bars, steel.....	15.00 to 15.50
Cast iron carwheels.....	14.50 to 15.00

Per Net Ton

No. 1 machinery cast.....	16.00 to 16.50
No. 1 railroad cast.....	15.50 to 16.00
No. 1 agricultural cast.....	15.50 to 16.00
Stove plate	14.00 to 14.50
Grate bars	13.50 to 14.00
Brake shoes	13.00 to 13.50
Iron angle and splice bars.....	14.00 to 14.50
Iron arch bars and transoms....	18.75 to 19.25
Iron car axles.....	22.00 to 22.50
Steel car axles.....	17.00 to 17.50
No. 1 railroad wrought.....	12.00 to 12.50
No. 2 railroad wrought.....	11.50 to 12.00
No. 1 busheling.....	10.25 to 10.75
No. 2 busheling.....	6.25 to 6.75
Locomotive tires, smooth.....	16.00 to 16.50
Pipes and flues.....	9.00 to 9.50

Warehouse Prices, f.o.b. Chicago

	Base per Lb.
Plates and structural shapes.....	3.10c.
Mild steel bars.....	3.00c.
Reinforcing bars, billet steel....	2.25c. to 2.60c.
Cold-finished steel bars and shafting—	
Rounds and hexagons.....	3.60c.
Flats and squares.....	4.10c.
Hoops	4.15c.
Bands	3.65c.
No. 24 black sheets.....	3.95c.
No. 10 blue annealed sheets.....	3.50c.
No. 24 galvanized sheets.....	4.80c.
Standard railroad spikes.....	3.55c.
Track bolts	4.55c.
Structural rivets	3.50c.
Boiler rivets	3.70c.
	Per Cent Off List
Machine bolts .....	.50 and 5
Carriage bolts .....	.47½
Coach or lag screws.....	.55 and 5
Hot-pressed nuts, squares, tapped or blank,	3.25c. off per lb.
Hot-pressed nuts, hexagons, tapped or blank,	3.75c. off per lb.
No. 8 black annealed wire, per 100 lb.....	\$3.30
Common wire nails, base per keg.....	3.05
Cement coated nails, base per keg.....	3.05

New York

Inquiry for Pig Iron Improves—Full Specifying of Steel Contracts

NEW YORK, Dec. 21.—With the knowledge that shipments of pig iron will not reach them until after Jan. 1, melters are specifying more freely. Inquiries are also more numerous, although by no means on a broad scale. There is considerable interest in forward requirements in low phosphorus. The Chrome Steel Works, Chrome, N. J., is in the market for 1000 to 2000 tons of low phosphorus for first half, and the Standard Steel Works, Philadelphia, is inquiring for 2000 to 3000 tons for the first quarter. The business will probably be placed with domestic producers, since the best available deliveries on foreign low phosphorus are late February and early March and foreign quotations are still too high to be competitive. The Crane Co., Bridgeport, Conn., is in the market for 1000 tons of high silicon foundry iron for January shipment, and the General Electric Co. is inquiring for 500 tons of No. 1X for Everett, Mass., and 500 tons, mostly No. 2 plain, for Bayway, N. J. Walter Scott & Co., Plainfield, N. J., have placed about 300 tons of foundry. Sales by local brokers during the past week totaled about 5200 tons. Prices show little change, with \$18, base Buffalo, and \$22, base eastern Pennsylvania furnace, still available on desirable tonnages of foundry iron. Virginia foundry iron is now rather generally quoted at \$22, base furnace. The Port Henry, N. Y., furnace, which has been undergoing repairs, is expected to be blown in Dec. 27.

We quote per gross ton delivered in the New York district as follows, having added to furnace prices \$1.39 to \$2.52 freight from eastern Pennsylvania, \$4.91 from Buffalo and \$5.54 from Virginia:

East. Pa. No. 2 fdy., sil. 1.75 to 2.25	\$23.39 to \$24.52
East. Pa. No. 2X fdy., sil. 2.25 to 2.75	23.89 to 25.02
East. Pa. No. 1X fdy., sil. 2.75 to 3.25	24.39 to 25.52
Buffalo fdy., sil. 1.75 to 2.25 (all rail)	22.91 to 23.91
No. 2 Virginia fdy., sil. 1.75 to 2.25	27.54 to 28.04

Ferroalloys.—Business in ferromanganese and spiegeleisen in this district is confined to carloads and small lots with some contracting for next year, but no large obligations are reported. One lot of 400 tons has been negotiated, and this was British alloy. Some of the agents of British producers are authorized to take contracts for the first half of next year. For carload and small lots for prompt delivery the quotations for spiegeleisen are \$37, furnace, for the higher grade, with \$36 asked for the lower grade whenever this can be furnished. There are about 1000 tons under negotiation. Contracts involving large tonnages into the first half of next year are subject to special negotiation, the price depending upon the quantity and place of delivery.

Reinforcing Bars.—Awards of concrete reinforcing bars have not been numerous in the last few days, but a few sizable tonnages are about to be placed. Of the new projects up for bids the largest is a factory building in Brooklyn, which will require 200 tons. Prices are unchanged.

Warehouse Business.—The year-end quiet has set in, and business is entirely confined to occasional lots of a few hundred pounds of material. Some shading of black and galvanized sheets is still reported, but it is evidently confined to a few small jobbers with incomplete stocks. In general, quotations continue firm at 4.35c. per lb., base, for black, and 5.10c. per lb., base, for galvanized sheets.

Cast Iron Pipe.—As the year draws to a close, competition is becoming stronger and concessions in price are rather generally offered, especially on business specifying the larger sizes. The price level is not definitely lower, but the tendency is evidently downward. There is a large volume of current inquiry for gas pipe, and in addition to the specifications of the United Gas Improvement Co., Philadelphia, the Brooklyn Union Gas Co., Brooklyn, N. Y., and the Consolidated

Gas Co., New York, the Boston Consolidated Gas Co., Boston, has opened bids on about 3000 tons of gas sizes. Highland Park, N. J., opened bids Dec. 20 on a contract involving about 600 tons of 12-in. water pipe. Low bids were submitted by the Utility Construction Co., New Brunswick, N. J., and the W. G. Fritz Co., West Orange, N. J.

We quote pressure pipe per net ton, f.o.b. New York in carload lots, as follows: 6-in. and larger, \$48.60 to \$50.60; 4-in. and 5-in., \$53.60 to \$55.60; 3-in., \$63.60 to \$65.60; with \$5 additional for Class A and gas pipe.

Finished Steel.—With inventories completed or practically so, many manufacturing consumers who have been ordering steel sparingly for several weeks are releasing specifications to complete fourth quarter contracts, with the result that the past week's business has shown gains in most lines. January rollings will probably be swelled somewhat, as a large part of the business is for shipment next month. New business, except in structural steel, is at a minimum and few contracts

Warehouse Prices, f.o.b. New York

Base per Lb.	
Plates and structural shapes.....	3.34c.
Soft steel bars and small shapes.....	3.24c.
Iron bars.....	3.24c.
Iron bars, Swedish charcoal.....	7.00c. to 7.25c.
Cold-finished steel shafting and screw stock—	
Rounds and hexagons.....	4.00c.
Flats and squares.....	4.50c.
Cold-rolled strip, soft and quarter hard.,	6.25c.
Hoops.....	4.49c.
Bands.....	3.99c.
Blue annealed sheets (No. 10 gage).....	3.89c.
Long terne sheets (No. 24 gage).....	5.80c.
Standard tool steel.....	12.00c.
Wire, black annealed.....	4.50c.
Wire, galvanized annealed.....	5.15c.
Tire steel, 1½ x ½ in. and larger.....	3.30c.
Smooth finish, 1 to 2½ x ¼ in. and larger.....	3.65c.
Open-hearth spring steel, bases.....	4.50c. to 7.00c.
Per Cent Off List	
Machine bolts, cut thread.....	40 and 10
Carriage bolts, cut thread.....	30 and 10
Coach screws.....	40 and 10
Boiler Tubes—	Per 100 Ft.
Lap welded steel, 2-in.....	\$17.33
Seamless steel, 2-in.....	20.24
Charcoal iron, 2-in.....	25.00
Charcoal iron, 4-in.....	67.00

Discounts on Welded Pipe		
Standard Steel—	Black	Galv.
½-in. butt.....	46	29
¾-in. butt.....	51	37
1-in. butt.....	53	39
2½-6-in. lap.....	48	35
7 and 8-in. lap.....	44	17
11 and 12-in. lap.....	37	12
Wrought Iron—		
½-in. butt.....	4	+19
¾-in. butt.....	11	+9
1-1½-in. butt.....	14	+6
2-in. lap.....	5	+14
3-6-in. lap.....	11	+6
7-12-in. lap.....	3	+16

Tin Plate (14 x 20 in.)		
	Prime	Seconds
Coke, 100 lb. base box.....	\$6.45	\$6.20
Charcoal, per box—	A	AAA
IC.....	\$9.70	\$12.10
IX.....	12.00	14.25
IXX.....	13.90	16.00

Terne Plate (14 x 20 in.)		
IC—20-lb. coating.....	\$10.00 to \$11.00	
IC—30-lb. coating.....	12.00 to 13.00	
IC—40-lb. coating.....	13.75 to 14.25	

Sheets, Box Annealed—Black, C. R. One Pass	
Per Lb.	
Nos. 18 to 20.....	4.15c.
No. 22.....	4.30c.
No. 24.....	4.35c.
No. 26.....	4.45c.
No. 28*	4.60c.
No. 30.....	4.85c.

Sheets, Galvanized	
Per Lb.	
No. 14.....	4.50c. to 4.75c.
No. 16.....	4.60c. to 4.85c.
No. 18.....	4.75c.
No. 20.....	4.90c.
No. 22.....	4.95c.
No. 24.....	5.10c.
No. 26.....	5.35c.
No. 28*	5.60c.
No. 30.....	6.00c.

*No. 28 and lighter, 36 in. wide, 20c. higher per 100 lb.

are being made, undoubtedly for the reason that most users of steel have enough coming to them on contracts to take care of their January requirements. A maker of automobile bodies in this district has shown the first buying activity since late October by sending in specifications on high finished sheets. Slightly less shading of prices on sheets is reported as the year end approaches. First quarter prices are generally 2.30c. for blue annealed, 3c. for black and 3.85c. for galvanized, all Pittsburgh base, but concessions of \$1 a ton are granted by some mills for immediate rollings. The market on cold rolled strip continues weak with concessions from 3c., Pittsburgh or Cleveland, in some instances. On other products the indications now are that fourth quarter prices will apply to first quarter business without deviation. Efforts of some users of steel bars to place business at 1.90c., Pittsburgh, seem to have been unsuccessful. Plates are quiet, showing no gain in orders, but there is increasing activity in structural steel, with the prospect that December bookings may make a very large showing. The largest Eastern producer reports that orders so far indicate that the month's shape business may be the largest since midsummer. Many large projects are under negotiation and an upward swing in this branch of steel business, at least, is likely to come in first quarter. Structural fabricators, however, are anxious for tonnage and are bidding very low prices, and buyers are taking advantage of this situation by placing contracts now. The Lehigh Valley Railroad has ordered 1200 freight cars. Other railroad car orders may be placed before the end of the month.

We quote mill shipments, New York delivery, as follows: Soft steel bars, 2.34c. per lb.; plates, 2.24c.; structural shapes, 2.34c.; bar iron, 2.24c.

Coke.—There is a good volume of inquiry in this district for furnace coke, probably about 20,000 tons. Demand for foundry grade is light, most inquiries being small with the exception of one for about 1500 tons. Prices are unchanged at \$4.75 to \$5.25 per net ton, Connellsville, for spot foundry and about \$3.50 to \$4 for prompt shipment furnace grade. Delivered prices of Connellsville foundry are: To northern New Jersey, \$8.78 to \$9.28 per ton; New York or Brooklyn, \$9.54 to \$10.04; Newark and Jersey City, N. J., \$8.66 to \$9.16. By-product foundry coke is unchanged at \$10.59 to \$11.77, delivered Newark or Jersey City.

Old Material.—Only a small tonnage of scrap is moving to eastern Pennsylvania consumers. No. 1 heavy melting steel is being purchased by brokers at \$15.50 per ton, delivered, and shipments are going forward to Bethlehem, Coatesville and Conshohocken, Pa. A temporary suspension of deliveries is reported at Steelton and Pottsville, Pa., and only blast furnace material is being accepted at a Sparrows Point, Md., plant. Efforts of eastern Pennsylvania mills to buy steel at \$15.50, which would necessitate a buying price by brokers of \$15 per ton, delivered, have been unsuccessful. A Phoenixville company is accepting small tonnages of machine shop turnings, bundled skeleton and stove plate, but a user of the same grades in Harrisburg is not in the market at present.

Buying prices per gross ton, New York, follow:

Heavy melting steel (yard).....	\$9.25 to \$9.75
Heavy melting steel (railroad or equivalent).....	11.75 to 12.85
Rails for rolling.....	12.50 to 13.00
Steel car axles.....	18.50 to 19.00
Iron car axles.....	24.00 to 24.50
No. 1 railroad wrought.....	13.00 to 14.00
Forge fire.....	9.25 to 9.75
No. 1 yard wrought, long.....	12.00 to 13.00
Cast borings (steel mill).....	9.25 to 9.75
Cast borings (chemical).....	13.00 to 13.50
Machine shop turnings.....	9.25 to 9.75
Mixed borings and turnings.....	9.25 to 9.75
Iron and steel pipe (1 in. diam., not under 2 ft. long).....	9.75 to 10.25
Stove plate (steel mill).....	9.25 to 9.75
Stove plate (foundry).....	11.00 to 11.50
Locomotive grate bars.....	10.25 to 10.75
Malleable cast (railroad).....	15.50 to 16.00
Cast iron carwheels.....	12.00 to 12.50
No. 1 heavy breakable cast.....	11.75 to 13.00

Prices which dealers in New York and Brooklyn are quoting to local foundries per gross ton follow:

No. 1 machinery cast.....	\$16.00 to \$16.50
No. 1 heavy cast (columns, building materials, etc.), cupola size	14.50 to 15.00
No. 2 cast (radiators, cast boilers, etc.).....	13.50 to 14.00

Cleveland

Steel and Pig Iron Dull—Wheeling & Lake Erie Buys Rails

CLEVELAND, Dec. 21.—New demand for finished steel is light, although mills are getting a moderate volume of steel bars for January shipment, some consumers whose stocks have become very low specifying for delivery during the first week of the month. The volume of business this month with some of the mills will fall below that of November. However, nearly all the steel covered in fourth quarter contracts will be taken out.

Steel bar users, generally, are marking time with respect to the first quarter, and few have placed contracts for that delivery. It will be several weeks before the Corrigan, McKinney Steel Co. will have ready for operation its 12-in. bar mill, which will make this company a market factor for bars larger than 1 in. in diameter. Current orders for plates are fair, and smaller consumers are covering quite freely for the first quarter. Orders from the automotive industry are still of a hand-to-mouth character outside of automobile body sheets, for which there is a fair demand, and the present rather limited amount of business from this source does not indicate that motor car builders are planning much of an increase in production early in January.

Some activity has developed in rails. The Wheeling & Lake Erie Railway has placed 5000 tons with the Carnegie Steel Co., and the Akron, Canton & Youngstown Railway has an inquiry out for 2400 tons. Other railroads in this territory have not yet sent out inquiries for their 1927 requirements. Steel bars are unchanged at 1.90c. to 2c., Cleveland, for small sizes, with mills outside of Cleveland making no concessions from the 2c., Pittsburgh, price to meet the local situation. Plates are firm at 1.90c., Pittsburgh, and structural material is holding to 2c. New building work is light. Repair work on Lake boats will require a fair tonnage of plates.

Iron Ore.—There were 1,075,076 tons more ore at Lake Erie docks and at furnace yards Dec. 1 than on the same date last year, the amount having been 42,760,964 gross tons as compared with 41,685,888 tons on the same date a year ago. Blast furnace operation is higher at present than a year ago, and if the furnaces keep up their present rate of consumption, the amount on docks and in furnace yards May 1 will not be much greater than on the same date this year. Ore on hand at furnaces Dec. 1 totaled 35,098,164 tons. The consumption of Lake ore in November was 4,716,986 tons, a loss of 230,553 tons as compared with October. The amount consumed in November, 1925, was 4,554,377 tons. Central district furnaces during November consumed 2,491,169 tons, a decrease of 110,981 tons. Lake front furnaces consumed 1,963,990 tons, or a loss of 135,432 tons. Consumption by Eastern furnaces was 118,780 tons, a falling off of 2921 tons, and all-rail furnaces used 143,057 tons, an increase of 18,781 tons for the month. There were 183 furnaces using Lake ore in blast Nov. 30, a decrease of five for the month.

Pig Iron.—Inquiry improved somewhat in the past week, but the better demand proved short-lived, as dullness again prevails in the market. A few small-lot sales were made, and one northern Ohio foundry purchased 800 tons of foundry iron for the first quarter. A Warren, Ohio, consumer has an inquiry out for 1500

Warehouse Prices, f.o.b. Cleveland

	Base per Lb.
Plates and structural shapes.....	3.00c.
Mild steel bars.....	3.00c.
Cold-finished rounds and hexagons.....	3.90c.
Cold-finished flats and squares.....	4.40c.
Hoops and bands.....	3.65c.
No. 24 black sheets.....	3.80c.
No. 10 blue annealed sheets.....	3.25c.
No. 24 galvanized sheets.....	4.65c.
No. 9 annealed wire, per 100 lb.....	\$3.00
No. 9 galvanized wire, per 100 lb.....	3.45
Common wire nails, base, per keg.....	3.00

tons of foundry iron, and a Mansfield melter is in the market for 600 tons of Northern and Southern foundry iron. One or two other fair-sized inquiries have come out but are regarded as market feelers. The automotive industry has purchased very little iron for next year, and it is understood that with the recent slump in this industry some of the motor car builders will carry over nearly enough iron purchased during the heavy buying movement last summer to last them through the first quarter. However, good releases have come from this industry for January shipment, although some of the automobile foundries in northern Ohio are still holding up shipments. While prices are untested, the market appears to be holding around recent quotations, with no apparent disposition to shade the prices of \$19, Cleveland and Valley, in northern Ohio. One Lake furnace is still on a \$19.50 base. For Cleveland delivery local furnaces continue to quote \$20 at furnace. In Michigan \$20, furnace, has become the ruling quotation on foundry and malleable iron.

Quotations below are per gross ton and except on basic and low phosphorus iron, are delivered Cleveland, including a 50c. switching charge for local iron. Ohio silvery and Southern iron prices are based on a \$3.00 freight rate from Jackson and \$6.01 from Birmingham:

Basic, Valley furnace.....	\$18.50
Northern No. 2 fdy., sil. 1.75 to 2.25.....	20.50
Southern fdy., sil. 1.75 to 2.25.....	26.01
Malleable.....	20.50
Ohio silvery, 8 per cent.....	31.50
Standard low phos., Valley furnace.....	28.00

Semi-Finished Steel.—Consumers are specifying for small lots for early requirements, but no inquiries have come out for first quarter contracts. Makers are showing no disposition to shade present prices.

Sheets.—Good specifications are coming from the automotive industry for body sheets, which are firm. Demand for other grades is light. On common black sheets 2.90c., Pittsburgh, is the ruling price for the heavier gages for early shipment, although 2.85c. occasionally appears. For the lighter gages and the better grades the 3c. base is holding quite generally, and a few first quarter contracts have been placed at that price, although consumers are showing little disposition to close contracts. Blue annealed sheets are commonly quoted at 2.30c., Pittsburgh, although some mills are going to 2.25c. for early shipment. Some first quarter contracts are being closed at the higher price. Galvanized sheets are quoted at 3.85c., both Pittsburgh and Ohio mill base, for the first quarter.

Cold-Rolled Strip Steel.—New orders are rather light, owing to the limited demand from the automotive industry. Mills are trying to hold to 3c., Cleveland, as the minimum price for round lots, and contend that is too low for profitable operation. For car lots 3.25c. is still being quoted. With one or two exceptions mills in this territory have not adopted the quantity differentials.

Reinforcing Bars.—Bids have been taken on three jobs requiring 1700 tons. The market is disturbed by quotations of 1.90c., Cleveland, by one producer. One maker of rail steel bars has shaded its regular price of 1.80c., mill, \$1 a ton to meet this price situation.

Warehouse Business.—Sales are not keeping up with the November volume. Prices are well maintained except on sheets, on which there is some shading.

Bolts, Nuts and Rivets.—Some of the automobile companies and other consumers have issued bolt and nut specifications for January shipment, so that the volume of business shows a gain since earlier in the month. The rivet market is unsettled, owing to the elimination by several makers of the extra on boiler rivets, but the leading local producer is still adhering to the boiler rivet extra and to the \$2.60 base price, although considerable shading of that quotation is reported.

Coke.—A number of producers are quoting prices on foundry coke for the first quarter, but consumers are showing little interest in placing business for that delivery. Standard Connellsville foundry coke ranges from \$4.50 to \$5.50, ovens, for prompt shipment, with quotations by some of the makers of the better grades at \$5.50 to \$6.50 for the first quarter. Heating coke is unchanged at \$3 to \$3.50, ovens.

Old Material.—About the only activity is in borings and turnings, for which dealers are paying \$11 to \$11.35 for delivery to Cleveland blast furnaces. Mills are showing no interest in buying scrap for January shipment. Most consumers have good stocks, and the shipment of considerable steel-making scrap is still being held up by Ohio mills. Prices are holding at recent quotations. Dealers are not trying to force scrap on the market, as they think they may be able to get somewhat better prices after the first of the year.

We quote per gross ton delivered consumers' yards in Cleveland:

Heavy melting steel.....	\$14.25 to \$14.50
Rails for rolling.....	16.25 to 16.50
Rails under 3 ft.....	16.50 to 17.00
Low phosphorus billet, bloom and slab crops.....	18.00 to 18.50
Low phosphorus sheet bar crops.....	16.50 to 17.00
Low phosphorus plate scrap.....	16.00 to 16.50
Low phosphorus forging crops.....	16.50 to 17.00
Cast iron borings.....	11.00 to 11.25
Machine shop turnings.....	9.00 to 9.25
Mixed borings and short turnings.....	11.00 to 11.25
Compressed sheet steel.....	13.50 to 14.00
No. 1 railroad wrought.....	11.50 to 12.00
No. 2 railroad wrought.....	14.00 to 14.50
Railroad malleable.....	16.50 to 17.00
Light bundled sheet stampings.....	12.00 to 12.50
Steel axle turnings.....	12.50 to 13.00
No. 1 cast.....	16.50 to 17.00
No. 1 busheling.....	12.00 to 12.50
No. 2 busheling.....	11.00 to 11.25
Drop forge flashings, 15 in. and under.....	11.50 to 12.00
Railroad grate bars.....	12.50 to 13.00
Stove plate.....	12.50 to 13.00
Pipes and flues.....	10.00 to 10.50

Philadelphia

Orders for 10,000 Tons of Track Supplies —Building to Take 15,000 Tons of Steel

PHILADELPHIA, Dec. 21.—The Pennsylvania Railroad has placed orders with steel mills for a total of about 10,000 tons of track supplies, of which 6000 tons was tie plates, about 2000 tons was spikes, the remainder being angle bars and track bolts. Bids have been invited on 15,000 tons of fabricated steel for an office building to be erected on Broad Street for the Philadelphia-Fidelity Trust Co. These are the only items of importance in a steel market which has shown little change from the quiet of the last few weeks. In some lines there has been a slight quickening of demand, but aside from tin plate there has been no noteworthy increase in volume. Tin plate sales have been large, nearly all consumers in this territory having made contracts for their first half requirements. One Eastern producer is booked practically full for the next six months.

In pig iron there is very little buying interest, but the furnaces of this district have two to three months' orders on their books and are not putting forth any unusual sales exertion in the face of the apparent expectation of buyers that prices will go lower.

Pig Iron.—Quotations on eastern Pennsylvania

Warehouse Prices, f.o.b. Philadelphia

	Base per Lb.
Tank steel plates, ¼-in. and heavier.....	2.80c. to 3.00c.
Tank steel plates, ⅝-in.....	3.00c. to 3.20c.
Structural shapes.....	2.75c. to 3.00c.
Soft steel bars, small shapes and iron bars (except bands).....	3.00c. to 3.20c.
Round-edge iron.....	3.50c.
Round-edge steel, iron finished, 1½ x 1½ in.....	3.50c.
Round-edge steel, planished.....	4.30c.
Reinforcing steel bars, square, twisted and deformed.....	3.00c.
Cold-finished steel, rounds and hexagons.....	4.00c.
Cold-finished steel, squares and flats.....	4.50c.
Steel hoops.....	4.00c. to 4.25c.
Steel bands, No. 12 gage to ⅞-in., inclusive.....	3.75c. to 3.90c.
Spring steel.....	5.00c.
No. 24 black sheets.....	4.35c.
No. 10 blue annealed sheets.....	3.50c.
No. 24 galvanized sheets.....	5.30c.
Diamond pattern floor plates—	
¼-in.....	5.30c.
⅝-in.....	5.50c.
Rails.....	3.20c.
Tool steel.....	8.50c.
Swedish iron bars.....	6.60c.

foundry pig iron still range from \$22 to \$22.50, furnace, for the base grade, but there is very little interest among consumers, and sellers are aware of the fact that buyers expect prices to go lower. This expectation is undoubtedly based largely on the fact that the advance of last October was predicated on potential fuel scarcity, which situation no longer exists. However, those furnaces which have two or three months' orders on their books are not pressing for sales which might necessitate concessions of 50c. or more a ton. It now appears that the furnaces will pay no more for coke in first quarter than in this quarter. Contracts have been made by one large coke producer at \$3.50, Connellsville, without a wage clause, and another large producer has sold at \$4.25, with a wage clause which provides that in the event of a wage reduction the price will be adjusted, making it \$3.50 in this case also. The present outlook is that wages in the coke region will be lowered on Jan. 1. Inquiry for foundry iron is light, but there are a few consumers ready to buy from 300 to 500 tons each. A user of basic, whose last purchase months ago was 10,000 tons, is asking for prices, and a consumer of low phosphorus iron is inquiring for 3000 tons. Prices for low phosphorus grades continue strong, largely because of the lack of competition from England.

The following quotations are, with the exception of those on low phosphorus iron, for delivery at Philadelphia and include freight rates varying from 76c. to \$1.63 per gross ton:

East. Pa. No. 2 plain, 1.75 to 2.25 sil.	\$22.76 to \$23.26
East. Pa. No. 2X, 2.25 to 2.75 sil.	23.26 to 23.76
East. Pa. No. 1X.....	23.76 to 24.26
Basic delivered eastern Pa.....	22.00 to 23.00
Gray forge	22.50 to 23.00
Malleable	23.50 to 24.00
Standard low phos. (f.o.b. New York State furnace).....	24.00 to 25.00
Copper bearing low phos. (f.o.b. furnace)	25.00 to 26.00
*Virginia No. 2 plain, 1.75 to 2.25 sil.	27.67 to 28.67
*Virginia No. 2X, 2.25 to 2.75 sil.	28.17 to 29.17

*The freight rate from Virginia furnaces to Philadelphia is \$5.17 per gross ton.

Ferromanganese.—It now appears that English ferromanganese will be a very small factor in the American market in the first half of 1927, for sales of the imported alloy have been negligible. Eastern consumers have been slow to buy, but a considerable tonnage has been booked by an Eastern producer with steel companies in the Central territory. Prices continue unchanged, \$100, seaboard, being quoted by importers and domestic producers.

Billets.—Buying of billets is slow, and the tonnages are small. Prices are unchanged at \$35, Pittsburgh, for rerolling quality and \$40 for ordinary forging quality.

Plates.—Eastern mills are operating at from 50 to 60 per cent, orders being in about the same volume as in recent weeks. Makers of plates are hopeful that orders will increase soon if the large car buying program of the railroads develops into contracts. Quotations are maintained at 1.90c., Pittsburgh.

Structural Material.—Keen competition among steel fabricating shops for tonnage has not only driven down prices on fabricated steel, but also on plain material. On some of the larger jobs mills have sold at Philadelphia delivered prices which, figured back to Pittsburgh, would mean about 1.80c. at that point. Eastern mills are making these prices, and the situation in Philadelphia is more chaotic than at other points in the East. Bids will close on Jan. 8 on 15,000 tons of fabricated steel for the office building of the Philadelphia-Fidelity Trust Co. on Broad Street, the largest Philadelphia structural job in some time.

Bars.—Specifications for steel bars are still lagging, and mills are in need of tonnage. The falling off in bar business has been more acute than in some of the other major lines. Quotations continue at 2c., Pittsburgh, for steel bars and at 2.22c., Philadelphia, for bar iron.

Sheets and Tin Plate.—Quoted prices on sheets are now quite generally as follows: 2.30c. for blue annealed, 3c. for black and 3.85c. for galvanized, Pittsburgh base. Some mills, however, are still selling at

about \$1 a ton below these prices for prompt specification. The prices named have applied on such first quarter contracts as have been made. Tin plate consumers have in almost all cases covered their requirements for first half, and mills are well booked, the principal Eastern producer having its output practically sold for the six months. There is keener competition for orders for tin mill black plate, with prices ranging from 3.10c. to 3.25c., Pittsburgh.

Imports.—Receipts of pig iron from Germany last week amounted to 8150 tons, and 400 tons came from Sweden. Other imports were: 7047 tons of iron ore from Sweden; 114 tons of steel bars from Sweden; 36 tons of structural steel from Germany; 128 tons of structural steel from Belgium.

Old Material.—For weeks prices of iron and steel scrap have remained almost stationary. Such price changes as have occurred have been relatively unimportant. In the past week there has been no activity to indicate a change one way or the other. Sales have been few.

We quote for delivery, consuming points in this district, as follows:

No. 1 heavy melting steel.....	\$15.50 to \$16.00
Scrap rails	15.50 to 16.00
Steel rails for rolling.....	17.00 to 17.50
No. 1 low phos., heavy, 0.04 per cent and under.....	20.00 to 21.00
Couplers and knuckles.....	18.50
Roller steel wheels.....	18.50
Cast iron carwheels.....	16.50 to 17.00
No. 1 railroad wrought.....	17.00 to 17.50
No. 1 forge fire.....	13.00
Bundled sheets (for steel works).....	13.00
Mixed borings and turnings (for blast furnace)	12.50 to 13.00
Machine shop turnings (for steel works)	13.00
Machine shop turnings (for rolling mill)	13.00 to 13.50
Heavy axle turnings (or equivalent)	14.00 to 14.50
Cast borings (for steel works and rolling mill).....	13.50
Cast borings (for chemical plant).....	15.00 to 16.00
No. 1 cast.....	17.00 to 17.50
Heavy breakable cast (for steel works)	16.00 to 16.50
Railroad grate bars.....	13.00 to 13.50
Stove plate (for steel works).....	13.00 to 13.50
Wrought iron and soft steel pipes and tubes (new specifications).....	14.00 to 14.50
Shafting	21.00 to 22.00
Steel axles	23.00 to 24.00

First Increase in Railroad Mileage in Nine Years

For the first time in nine years the total mileage of railroads in the United States is increasing instead of decreasing, according to a statement by *Railway Age*. Mileage owned by the railroads reached its maximum in the middle of 1916, at 254,251 miles. It declined 214 miles in the latter half of 1916, 411 miles in 1917, 98 miles in 1918, 377 miles in 1919, 307 miles in 1920, 1669 miles in 1921, 763 miles in 1922, 191 miles in 1923 and 66 miles in 1924. Thus in 8½ years there was a total decline of 4095 miles.

In 1925, on the other hand, there was an increase of 412 miles, representing the excess of new mileage built over miles abandoned, bringing the total up to 250,568 miles. Preliminary reports for 1926 indicate that there has been probably a further increase this year.

To Make Steel Castings at Duluth

The Lake Superior Steel Foundry Co., Fifty-third Avenue West and Polk Street, Duluth, Minn., has been incorporated under the Minnesota laws with a capital of \$50,000 for the manufacture of acid open-hearth steel castings. The company has acquired the plant of the old Imperial Iron Works, which was operated during the war by the McDougall-Duluth Shipbuilding Co., and will not require new equipment. The first heat was poured on Dec. 1, and the company is already in the market for materials and supplies. Donald C. Bakewell, president of the Duquesne Steel Foundry Co., Pittsburgh, is president of the company, and the superintendent and furnace men were brought from the Pittsburgh district. Other officers are: Edward C. Congdon, vice-president; Ward Ames, Jr., treasurer, and A. A. Bakewell, secretary and manager.

San Francisco

Heavier Buying of All Steel Products—To Spend \$4,000,000 for Federal Buildings

SAN FRANCISCO, Dec. 18 (*By Air Mail*).—Heavier buying in nearly all departments of the market has been a feature of the week. In nails and tin plate, a fair amount of new business has come out, in cast iron pipe activity has continued, and both in fabricated and reinforcing steel there has been a larger number of lettings and inquiries. While first quarter specifications, on the whole, are not so heavy as they were at this time last year, orders and inquiries are beginning to come into the market, and it is expected that steel bookings in this territory for the early part of 1927 will equal in tonnage those of 12 months ago. Of interest to local fabricators and concrete bar jobbers is the announcement that \$4,000,000 will be expended next year by the Treasury Department for new Federal buildings in San Francisco.

Pig Iron.—It is understood that the leading Western producer has taken a number of good-sized contracts for foundry iron for delivery to consumers at specified periods during the first half. Quotations are unchanged.

	Per Gross Ton
*Utah basic	\$25.00 to \$26.00
*Utah foundry, sil. 2.75 to 3.25 ..	25.00 to 26.00
**Indian foundry, sil. 2.75 to 3.25 ..	25.00
**German foundry, sil. 2.75 to 3.25 ..	24.25

*Delivered San Francisco.

**Duty paid, f.o.b. cars San Francisco.

Shapes.—Fabricated structural lettings for the week total 3660 tons; fresh inquiries call for 1765 tons. The largest individual job, 275 tons, for a machine shop and sugar mill in Honolulu, T. H., was taken by the Western Iron Works, San Francisco. About 3000 tons of shapes and plates for 600 underframes for the Pacific Fruit Express Co. has been placed in the East. The cars will be fabricated at the shops of the Pacific Car & Foundry Co. in Portland, Ore. In Oakland, Cal., a building at Euclid and Grand Avenues will require 1000 tons. New bids have been called for on 225 tons for a theater at Klamath Falls, Ore. Eastern mills continue to quote plain material at 2.35c., c.i.f. Coast ports.

Plates.—The Western Pipe & Steel Co., San Francisco, has been awarded 375 tons for a syphon for the East Bay Municipal Utility District, Oakland, Cal. Lockbar pipe will be furnished. No fresh inquiries of 100 tons or over have come up for figures during the week. Eastern mills quote plates at 2.30c., c.i.f. Coast ports.

Bars.—Local concrete bar jobbers have booked about 1000 tons during the week, and fresh inquiry calls for 1300 tons. The largest individual letting, 300 tons, for the Pacific Portland Cement Co., Redwood City, Cal., was taken by a San Francisco jobber. An apartment building in Seattle, Wash., calls for 1000 tons. The minimum quotations of local jobbers in reinforcing bars range from about 2.30c. to 2.45c., base, per lb., on lots of 200 tons.

Cast Iron Pipe.—The city of Sacramento, Cal., has awarded 2870 tons as follows: 1480 tons of 4, 6, 8 and 24-in. Class B, sand-cast pipe to the National Cast Iron Pipe Co.; 240 tons of 10-in. mono-cast pipe to the American Cast Iron Pipe Co., and 150 tons of 10-in. DeLavaud cast iron pipe to the United States Cast

Iron Pipe & Foundry Co. The American Cast Iron Pipe Co. has taken 500 tons of 8-in. Class C pipe for the city of Seattle, Wash. The city of Huntington Park, Cal., has placed 1200 tons through Geo. Mitchell Co. In San Luis Obispo, Cal., 258 tons of 2 and 8-in. Class B pipe has been placed through an unnamed company. New inquiry calls for 4263 tons. The city of Portland, Ore., will open bids Jan. 3 on 3650 tons of 4 to 24-in. Class B pipe. Redwood City, Cal., will take bids Dec. 20 on 204 tons of 8-in. Class B pipe, and on Jan. 6 the city of Bellingham, Wash., will open bids on 409 tons of 4, 6, 10 and 12-in. Class B pipe. Quotations are firm at \$49 to \$50, base, f.o.b. dock, San Francisco.

Steel Pipe.—The Pacific Gas & Electric Co., San Francisco, has placed 500 tons of standard line pipe with an Eastern producer.

Nails.—Several inquiries for cement-coated nails have come out during the week. The California Packing Corporation, San Francisco, is inquiring for 15,000 to 20,000 kegs. The Certainteed Products Corporation, Richmond, Cal., has asked for bids on 6000 to 7000 kegs. Other inquiries for small lots are pending. Local buyers are expected to place their year's requirements during the next few weeks. While prices have not been firm for some time, local quotations both on wire and cement-coated nails, in carload lots, remain nominally at \$3.20, base, per 100-lb. keg.

Tin Plate.—H. B. Prince Co., Oakland, Cal., has placed about 50,000 base boxes with the Weirton Steel Co. and the Washington Tin Plate Co. The Jones & Laughlin Steel Corporation has been awarded a contract by the G. N. Easton Can Co., San Jose, Cal., independent can maker, for its year's requirements in tin plate. The estimated annual capacity of this plant is 60,000,000 cans. It is understood that the Western Can Co., San Francisco, will not place its requirements at present because of a heavy carry-over.

Warehouse Business.—Little except routine business is being done because of the approaching holidays and preparations for inventory-taking. Quotations are unchanged.

Birmingham

Three Blast Furnaces Banked—Pipe Shops to Shut Down for Ten Days

BIRMINGHAM, Dec. 21.—The banking of fires at three blast furnaces making foundry iron, though of temporary duration, will hold down production while buying is at a low ebb. Surplus stocks of iron on furnace yards will take care of any excess of demand over output. Some shipments of iron were rushed forward last Monday and Tuesday in an effort to reach plants in this territory before the end of the week. Many consumers have very little stock on yards, and the belief is that immediately after inventories have been taken there will be a steady volume of buying, even if the policy of hand-to-mouth purchases is continued. Quotations are unchanged on the basis of \$20, Birmingham, for No. 2 foundry. All foundry iron manufacturers with more than one blast furnace are participating in the reduction of production. The Sloss-Sheffield Steel & Iron Co. will blow in its No. 3 blast furnace at North Birmingham in the first week of January, at the same time blowing out its No. 2 City furnace. Output of basic iron is undisturbed, with demand steady. The Gulf States Steel Co. has three of its six open-hearth furnaces in operation, while practically all of the Steel Corporation open-hearth furnaces are active.

We quote per gross ton, f.o.b. Birmingham district furnaces, as follows:

No. 2 foundry, 1.75 to 2.25 sil.....	\$20.00
No. 1 foundry, 2.25 to 2.75 sil.....	20.50
Basic	20.00
Charcoal, warm blast.....	30.00

Rolled Steel.—There has been a small decline in steel buying, principally in lighter material and in structural steel for fabrication. Some of the heavier products are in very strong demand, notably rails. Steel plant operations will continue until Friday, Dec.

Warehouse Prices, f.o.b. San Francisco

	Base per Lb.
Plates and structural shapes.....	3.30c.
Mild steel bars and small angles.....	3.30c.
Small channels and tees, ¾-in. to 2¾-in..	3.90c.
Spring steel, ¼-in. and thicker.....	5.00c.
No. 24 black sheets.....	4.90c.
No. 28 black sheets.....	5.15c.
No. 10 blue annealed sheets.....	4.00c.
No. 24 galvanized sheets.....	5.65c.
No. 28 galvanized sheets.....	6.15c.
Common wire nails, base per keg.....	\$3.75
Cement coated nails, 100-lb. keg.....	3.75
Cement coated nails, count keg.....	3.00

24, and will resume the following Monday. Better feeling is noted in steel than in pig iron circles. Prospects for early spring needs in steel are bright, and on the basis of unfilled tonnage already in hand active output for several months is assured. Local railroad construction now being started promises to call for considerable steel in the coming year. Full operation of the eight open-hearth furnaces of the Steel Corporation at Fairfield, Ala., will be an accomplished fact early in January.

Cast Iron Pipe.—While a few lettings of pressure pipe were reported in the past week, trade is still lagging. Several shops have curtailed production and will stop operations almost entirely by the end of the week. The greater number of shops of the district will be down 10 days at the most. Upon resumption, it is understood there will be warrant for steady operations for a considerable period. Prices are still weak at \$36 to \$37, Birmingham, for 6-in. and larger diameters. Shipments of pipe have also declined and promise to show still further recessions until after the holidays.

Coke.—Curtailement of coke output is not extensive but is noticeable after the recent large scale of production. Foundry coke is unchanged in price at \$5.50, Birmingham, with \$6 being obtained for spot coke. All by-product coke plants are in operation, but one or two are not operating full. New coke plants now being pushed to completion in this district include 77 ovens at Fairfield and 49 at Tarrant City, Ala. The North Birmingham plant of Sloss-Sheffield Steel & Iron Co. will also have a larger capacity following the completion of improvements by the Smet-Solvay Co.

Old Material.—No change is noted in the market. Considerable heavy melting steel and some cast are moving in current shipments, prices are weak and at a low ebb, and dealers maintaining good yard forces preparing material. More than half a dozen blast furnaces are melting scrap in their charges.

We quote per gross ton, f.o.b. Birmingham district yards, as follows:

Cast iron borings, chemical.....	\$15.00 to \$16.00
Heavy melting steel.....	13.00 to 14.00
Railroad wrought.....	11.00 to 12.00
Steel axles.....	17.00 to 18.00
Iron axles.....	17.00 to 18.00
Steel rails.....	13.00 to 14.00
No. 1 cast.....	16.00 to 17.00
Tramcar wheels.....	16.50 to 17.50
Carwheels.....	16.00 to 16.50
Stove plate.....	14.00 to 14.50
Machine shop turnings.....	8.00 to 8.50
Cast iron borings.....	8.00 to 8.50
Rails for rolling.....	15.00 to 16.00

St. Louis

Warehouse Bookings Improve Because of Oil Field Activity—Pig Iron Quiet

ST. LOUIS, Dec. 21.—Sales of pig iron during the last week were confined to a few carloads, mostly of special analyses, and the only inquiries of size before the market are 1500 tons from an Illinois stove maker and 3000 tons from a Louisville melter, both for first quarter delivery. Melters are said to have let their stocks of pig iron run lower than ever before in an en-

deavor to show small inventories of raw materials, buying only enough to last from 10 days to two weeks. In view of this, it is expected that there will be considerable buying early in the year, even if there should not be any marked increase in the sale of castings.

We quote delivered consumers' yards, St. Louis, as follows, having added to furnace prices \$2.16 freight from Chicago, \$4.42 from Birmingham, all rail, and 81c. average switching charge from Granite City:

Northern fdy., sil. 1.75 to 2.25...	\$22.16
Northern malleable, sil. 1.75 to 2.25	22.16
Basic.....	22.16
Southern fdy., sil. 1.75 to 2.25...	24.42
Granite City iron, sil. 1.75 to 2.25	\$22.31 to 22.81

Finished Iron and Steel.—The Dunham Construction Co., Chemical Building, St. Louis, has been awarded the general contract for new buildings at the municipal waterworks plant, requiring 750 tons of structural steel and 100 tons of reinforcing bars. Another large structural job got under way the last week—the Missouri Pacific Railroad office building, and bids have been asked for 400 tons of reinforcing bars required in the foundation. Warehouse business for December is fully up to that of November, which was about 20 per cent ahead of bookings for the same period in 1925. Orders from the oil fields are responsible for this. The usual holiday lull prevails in other lines.

Coke.—Demand for foundry coke has declined somewhat, and this also is attributed to taking of inventory. The melt is said to be keeping up well, and it is expected that consumers will be back in the market after the first of the year. Demand for domestic coke, likewise, is off, as dealers are well supplied and will not buy additional stocks until colder weather brings consumer purchases that will cut down their piles.

Old Material.—The market is virtually at a standstill. Consumers are well supplied with scrap and will not buy at prices at which the dealers want to sell. Dealers believe that the market will be stronger after the first of the year and are holding until then.

We quote dealers' prices f.o.b. consumers' works, St. Louis industrial district and dealers' yards, as follows:

Per Gross Ton	
Iron rails.....	\$10.00 to \$10.50
Rails for rolling.....	15.25 to 15.75
Steel rails less than 3 ft.....	16.00 to 16.50
Relaying rails, 60 lb. and under.....	20.50 to 23.50
Relaying rails, 70 lb. and over.....	26.50 to 29.00
Cast iron carwheels.....	14.00 to 14.50
Heavy melting steel.....	13.00 to 13.50
Heavy shoveling steel.....	13.00 to 13.50
Frogs, switches and guards cut apart.....	14.00 to 14.50
Railroad springs.....	15.50 to 16.00
Heavy axle and tire turnings.....	10.50 to 11.00
No. 1 locomotive tires.....	16.25 to 16.75
Per Net Ton	
Steel angle bars.....	12.25 to 12.75
Steel car axles.....	17.00 to 17.50
Iron car axles.....	20.00 to 20.50
Wrought iron bars and transoms.....	17.50 to 18.00
No. 1 railroad wrought.....	10.75 to 11.25
No. 2 railroad wrought.....	11.75 to 12.25
Cast iron borings.....	9.00 to 9.50
No. 1 busheling.....	10.25 to 10.75
No. 1 railroad cast.....	14.25 to 14.75
No. 1 machinery cast.....	16.75 to 17.25
Railroad malleable.....	12.50 to 13.00
Machine shop turnings.....	6.25 to 6.75
Bundled sheets.....	7.50 to 8.00

Some Reduction in Detroit Scrap

DETROIT, Dec. 21.—There have been no sales of any size recorded during the past week on old material. Long turnings registered a further decline of 50c. per ton, and due to low production in automotive shops, automobile cast shows a new low point of \$19 to \$20. Anticipated January schedules are on a good basis, and melters are expecting to be in fairly heavy production by the middle of next month.

The following prices are quoted on a gross ton basis f.o.b. producers' yards, excepting stove plate, No. 1 machinery cast and automobile cast, which are quoted on a net ton basis:

Heavy melting and shoveling steel.....	\$12.50 to \$13.00
Borings and short turnings.....	9.00 to 9.50
Long turnings.....	7.50 to 8.00
No. 1 machinery cast.....	17.00 to 18.00
Automobile cast.....	19.00 to 20.00
Hydraulic compressed.....	11.75 to 12.25
Stove plate.....	13.50 to 14.50
No. 1 busheling.....	11.00 to 11.50
Sheet clippings.....	7.75 to 8.25
Flashings.....	10.75 to 11.25

Warehouse Prices, f.o.b. St. Louis

	Base per Lb.
Plates and structural shapes.....	3.25c.
Bars, mild steel or iron.....	3.15c.
Cold-finished rounds, shafting and screw stock.....	3.75c.
No. 24 black sheets.....	4.45c.
No. 10 blue annealed sheets.....	3.60c.
No. 24 galvanized sheets.....	5.25c.
Black corrugated sheets.....	4.65c.
Galvanized corrugated sheets.....	5.30c.
Structural rivets.....	3.65c.
Boiler rivets.....	3.85c.
	Per Cent Off List
Tank rivets, $\frac{3}{8}$ -in. and smaller.....	70
Machine bolts.....	50 and 5
Carriage bolts.....	47½
Lag screws.....	55 and 5
Hot-pressed nuts, square, blank or tapped.....	3.25c. off per lb.
Hot-pressed nuts, hexagons, blank or tapped.....	3.75c. off per lb.

Cincinnati

Mill Shipments Show 25 Per Cent Gain Over 1925—Sarah Furnace Out

CINCINNATI, Dec. 21.—The usual holiday quietness has settled on the local pig iron market, and sales in the past week were confined to small lots. Since many melters have not used as much iron as expected during the fourth quarter and since upward revision of prices is regarded as remote, consumers are waiting until next month before making further purchases. Despite the fact that a number of foundries have enough stock on hand to meet their needs in January and February, considerable buying by mid-January is anticipated. Producers and consumers alike are watching closely to see what prices are brought out by the inquiry of the Standard Sanitary Mfg. Co. for its Louisville plant. It is thought likely that this transaction will be closed at a delivered price that will figure back to less than \$20, base Ironton. Output of foundry iron in the southern Ohio district has been curtailed by the blowing out of the Sarah furnace of the Belfont Steel & Wire Co., Ironton. A few orders for southern Ohio foundry have been booked at \$20, base Ironton, and Ironton furnace interests declare that they will not dip below that figure. Producers in the South are asking \$20, base Birmingham, and only scattered lots are being shipped north of the Ohio River. Jackson County silvery furnaces are reported to be insisting that customers with old contracts at lower prices than the present schedule take their requirements before Jan. 1. Malleable iron is being sold in southwestern Ohio at \$20, base Ironton, but in territory up-State a concession of 50c. a ton is being made.

Based on freight rates of \$3.69 from Birmingham and \$1.89 from Ironton, we quote f.o.b. Cincinnati:

Alabama fdy., sil. 1.75 to 2.25	
(base)	\$23.69
Alabama fdy., sil. 2.25 to 2.75...	24.19
Tennessee fdy., sil. 1.75 to 2.25...	23.69
Southern Ohio silvery, 8 per cent.	30.39
So. Ohio fdy., sil. 1.75 to 2.25....	21.89
So. Ohio malleable.....	21.39

Finished Material.—In the past week specifications and orders increased somewhat, especially in the bar and structural steel markets, and December bookings are expected to compare favorably with those in November. Several important mills report that shipments for the entire year probably will show an increase of 25 per cent over those in 1925. Consumers are adhering strictly to a policy of close-range buying, and few contracts for first quarter are being closed. Fabricators have meager stocks and are relying upon producers for quick delivery of material for current requirements. Jobbers are holding down their tonnage during the inventory period, while industrial purchasers in general are taking only small lots to satisfy present needs. Prices are firm in the face of the indifference shown by consumers. Bars and structural shapes are steady at 2c., base Pittsburgh, and tank plates are unchanged at 1.90c., base Pittsburgh. No improvement is noted in the sheet market, concessions

Warehouse Prices, f.o.b. Cincinnati

	Base per Lb.
Plates and structural shapes....	3.40c.
Bars, mild steel or iron.....	3.30c.
Reinforcing bars	3.30c.
Hoops	4.00c. to 4.25c.
Bands	3.95c.
Cold-finished rounds and hexagons	3.85c.
Squares	4.35c.
Open-hearth spring steel.....	4.75c. to 5.00c.
No. 24 black sheets.....	4.05c.
No. 10 blue annealed sheets.....	3.60c.
No. 24 galvanized sheets.....	4.90c.
Structural rivets	3.75c.
Small rivets .....	.65 per cent off list
No. 9 annealed wire, per 100 lb.....	\$3.00
Common wire nails, base per keg.....	2.95
Cement coated nails, base per 100-lb. keg..	3.15
Chain, per 100 lb.....	7.55
Net per 100 Ft.	
Lap welded steel boiler tubes, 2-in.....	\$18.00
4-in.....	38.00
Seamless steel boiler tubes, 2-in.....	19.00
4-in.....	39.00

having been made in black, galvanized and blue annealed. Black sheets range from 3c. to 3.10c., base Pittsburgh, although there are a few isolated cases in which 2.90c. has been named. Competition in galvanized sheets has brought out quotations of 3.80c. to 3.85c., base Pittsburgh. Buyers of blue annealed sheets are paying from 2.30c. to 2.40c., base Pittsburgh, although few orders have been booked recently. Automobile body sheets are bringing 4.25c., base Pittsburgh. Demand for wire products is light, and no increase in bookings is anticipated for several weeks. Meanwhile, common wire nails are quoted at \$2.65 per keg, base Ironton or Pittsburgh, and plain wire at \$2.50 per 100 lb., base Ironton or Pittsburgh. A local gas-holder fabricator has taken two attractive jobs in the past week.

Reinforcing Bars.—Aside from 1500 tons of bars for an addition to the Union Central Building, Cincinnati, upon which a decision is expected within the next week, there are no important jobs pending. New billet bars are quoted nominally at 2c., base Pittsburgh, and rail steel bars at 1.90c., base mill.

Warehouse Business.—While the usual seasonal decline in business has set in, sales are about normal for this time of the year. Preliminary estimates by jobbers show that bookings during the entire year will exceed those in 1925 by approximately 5 to 10 per cent. Prices are steady and unchanged.

Coke.—Sales and inquiries have dropped to the lowest point in a number of months. The lack of interest is caused partly by the usual holiday dullness and partly by the fact that consumers are well stocked to meet current requirements. A sizable decrease in the foundry melt in this territory is reflected in a falling off in specifications for by-product foundry coke. The absence of a continuous period of cold weather extending over several weeks has been felt in by-product domestic coke, which is clogging the market in several consuming centers. The first sign of a break in the price of New River coke is seen in the offering of foundry grades at \$8 per net ton, f.o.b. ovens, a reduction of \$1 a ton. Conflicting reports regarding wage agreements in that district, however, leave the question of future quotations uncertain for the moment.

Based on freight rates of \$2.14 from Ashland, Ky., and \$2.59 from Wise County ovens and New River ovens, we quote f.o.b. Cincinnati: Wise County foundry, \$8.09 to \$9.59; New River foundry, \$10.59 to \$11.59; by-product foundry, \$10.14.

Old Material.—No further weakness has developed in the past week. A nearby steel plant is holding up shipments on contract until next month, while mills in the Valley have not authorized the release of contract tonnages on which suspension of delivery was requested several weeks ago. On the other hand, several producers in this district are still taking material at a normal rate, even though stock piles have attained a liberal proportion. Prices are unchanged.

We quote dealers' buying prices, f.o.b. cars, Cincinnati:

Per Gross Ton	
Heavy melting steel.....	\$12.50 to \$13.00
Scrap rails for melting.....	12.50 to 13.00
Short rails	17.50 to 18.00
Relaying rails	26.50 to 27.00
Rails for rolling.....	14.00 to 14.50
Old carwheels.....	12.00 to 12.50
No. 1 locomotive tires.....	16.50 to 17.00
Railroad malleable	14.50 to 15.00
Agricultural malleable	13.50 to 14.00
Loose sheet clippings.....	7.00 to 7.50
Champion bundled sheets.....	8.50 to 9.00
Per Net Ton	
Cast iron borings.....	7.50 to 8.00
Machine shop turnings.....	7.00 to 7.50
No. 1 machinery cast.....	17.00 to 18.00
No. 1 railroad cast.....	14.00 to 14.50
Iron axles	19.50 to 20.00
No. 1 railroad wrought.....	9.00 to 9.50
Pipes and flues.....	7.50 to 8.00
No. 1 busheling	9.00 to 9.50
Mixed busheling	5.50 to 6.00
Burnt cast	6.50 to 7.00
Stove plate	9.00 to 9.50
Brake shoes	9.50 to 10.00

A Diesel electric hydraulic dredge is being built by the Bucyrus Co., South Milwaukee, Wis., for an unnamed interest. It will be equipped with four engines of 1150 hp. each, with two 60-hp. auxiliary engines, and a 3000-hp. motor for an 8-ft. cutter head and pumps.

Boston

Pig Iron Orders Are Small—Sales for Year Total 300,000 Tons

BOSTON, Dec. 21.—Although quiet, the pig iron market is more active than generally anticipated. Sales during the past week ranged from carlots to 500 tons, with Buffalo furnaces taking most of the business. Individual lots included 500 tons of No. 2X Buffalo iron sold to a Vermont foundry at \$18.50 per ton, furnace; 300 tons of No. 1X Buffalo iron sold at around \$25, delivered, and 200 tons No. 2X Mystic iron disposed of at \$21.25, Everett, to a Rhode Island company; 300 tons of No. 2 plain Buffalo iron sold at \$18, furnace, to a Massachusetts shop; and numerous smaller lots of Buffalo and Mystic iron, including two cars of Buffalo malleable bought by a Massachusetts machinery maker at \$19, furnace. New York State furnaces have sold some iron at prices quoted a week ago, but very little eastern and western Pennsylvania, Virginia or Alabama iron has been sold of late. The Champlain furnace, following unexpected delays, will blow in soon after Christmas. Sales of iron in New England this year are estimated at 300,000 to 350,000 tons, or somewhat less than the total for 1925.

We quote delivered prices per gross ton to most New England points as follows, having added \$3.65 freight from eastern Pennsylvania, \$4.91 from Buffalo, \$5.92 from Virginia, and \$6.91 to \$8.77 from Alabama:

East. Penn., sil. 1.75 to 2.25.....	\$25.65 to \$26.15
East. Penn., sil. 2.25 to 2.75.....	26.15 to 26.65
Buffalo, sil. 1.75 to 2.25.....	22.91 to 23.91
Buffalo, sil. 2.25 to 2.75.....	23.41 to 24.41
Virginia, sil. 1.75 to 2.25.....	28.42 to 29.92
Virginia, sil. 2.25 to 2.75.....	28.92 to 30.42
Alabama, sil. 1.75 to 2.25.....	26.91 to 28.77
Alabama, sil. 2.25 to 2.75.....	27.41 to 29.27

Cast Iron Pipe.—Pawtucket, R. I., has awarded 600 tons of 6 to 24-in. pipe to the Donaldson Iron Co. No other municipal business is pending. It is reported the Boston Consolidated Gas Co. has closed on approximately 5000 tons of pipe for its first half requirements and that another large public utility company is about to close on a considerable tonnage of large pipe. Prices quoted openly on domestic pipe are: 4-in., \$59.10 per net ton, delivered common Boston freight rate points; 6 to 12-in., \$54.10 to \$55.10; larger pipe, \$53.10 to \$54.10. A \$5 differential is asked on Class A and gas pipe. Prices quoted on foreign pipe run as much as \$4.50 a ton under domestic prices, but foreign pipe does not come up to certain specifications demanded; consequently little is being sold in New England.

Rails.—The Bethlehem Steel Co. was the only bidder on 730 tons open-hearth and 1383 tons ferro-titanium steel rails required by Boston. It submitted alternative bids on both lots, prices in all instances being on a delivered basis at Somerville, Mass. Bids on the 730-ton lot were \$49.78 a ton for first quality and \$47.63 for second quality. The 1383-ton lot called for different lengths and types of rails and varying

treatments. Bids were divided into four groups. For first-quality rails they averaged \$59.28¼, and for second quality \$56.63¼.

According to officials, the report that the Boston & Maine Railroad is in the market for 15,000 tons of rails is erroneous. In the 1927 budget it is stated there is a possibility the company may need 15,000 tons, but officials say no action has been taken in the matter. The company still has on hand several thousand tons of German rails purchased this year.

Coke.—Shipments of New England by-product foundry coke continue to run smaller than those for November, this year, and December, last year. Sales of domestic fuel, however, remain heavy. The New England Coal & Coke Co. and the Providence Gas Co. are still doing business in foundry coke at \$13.50 a ton, delivered, within a \$3.10 freight rate zone. The New England Coal & Coke Co.'s new battery of ovens is in operation. The company now has a capacity of approximately 1,000,000 tons of coke per year. It is assured that the New Haven Gas Co., recently acquired by Pennsylvania interests, will make foundry coke next year. The West Boston Gas Co., Framingham, Mass., is installing by-product ovens but will confine itself to the production of domestic fuel.

Old Material.—Current activity is confined largely to scattering small sales of heavy melting steel, turnings, borings, skeleton and forged material, with prices for such scrap and for other grades unchanged. Although inactive, the old material situation reaches the end of 1926 in a healthy condition. New England stocks of scrap are smaller than they were a year ago and are held largely by the strongest companies financially.

The following prices are for gross-ton lots, delivered at consuming points:

Textile cast	\$18.00 to \$19.00
No. 1 machinery cast	18.00 to 18.50
No. 2 machinery cast	16.50 to 17.00
Stove plate	13.00 to 13.50
Railroad malleable	19.00 to 19.50

The following prices are offered per gross-ton lots, f.o.b. Boston rate shipping points:

No. 1 heavy melting steel.....	\$10.50 to \$11.00
No. 1 railroad wrought	11.50 to 12.00
No. 1 yard wrought	10.50 to 11.00
Wrought pipe (1 in. in diameter, over 2 ft. long).....	9.00 to 9.50
Machine shop turnings	8.00 to 8.50
Cast iron borings, chemical.....	10.00 to 10.50
Cast iron borings, rolling mill.....	8.00 to 8.50
Blast furnace borings and turnings	8.00 to 8.50
Forged scrap	8.50 to 9.00
Bundled skeleton, long	8.00 to 8.50
Forged flashings	8.50 to 9.00
Shafting	15.50 to 16.00
Street car axles	15.50 to 16.00
Rails for rerolling	11.50 to 12.50
Scrap rails	10.50 to 11.00

Buffalo

Buffalo Merchant Furnaces Comfortably Booked—Mill Output Recedes

BUFFALO, Dec. 21.—With the exception of two or three 100-ton inquiries for pig iron, there is no new business before Buffalo makers, but an encouraging feature of the market from the furnace standpoint is that melters are continuing to issue liberal shipping instructions and in some cases are pressing for iron. With few new inquiries the price structure has not changed, and \$19, furnace, for Eastern shipment and \$20 for Buffalo district shipment are still being

Warehouse Prices, f.o.b. Boston

	Base per Lb.
Soft steel bars and small shapes.....	3.265c.
Flats, hot-rolled	4.15c.
Reinforcing bars	3.265c. to 3.54c.
Iron bars—	
Refined	3.265c.
Best refined	4.60c.
Norway, rounds	6.60c.
Norway, squares and flats.....	7.10c.
Structural shapes—	
Angles and beams.....	3.365c.
Tees	3.365c.
Zees	3.465c.
Plates	3.365c.
Spring steel—	
Open-hearth	5.00c. to 10.00c.
Crucible	12.00c.
Tire steel	4.50c. to 4.75c.
Bands	4.015c. to 5.00c.
Hoop steel	5.50c. to 6.00c.
Cold rolled steel—	
Rounds and hexagons.....	4.05c.
Squares and flats.....	4.55c.
Toe calk steel.....	6.00c.

Warehouse Prices, f.o.b. Buffalo

	Base per Lb.
Plates and structural shapes.....	3.40c.
Mild steel bars	3.30c.
Cold-finished shapes	4.45c.
Rounds	3.95c.
No. 24 black sheets	4.30c.
No. 10 blue annealed sheets.....	3.80c.
No. 24 galvanized sheets.....	5.15c.
Common wire nails, base per keg.....	\$3.90
Black wire, base per 100 lb.....	3.90

quoted. In the last buying movement it is estimated that the Buffalo district furnaces sold between 100,000 and 125,000 tons.

We quote prices per gross ton, f.o.b. Buffalo, as follows:

No. 2 plain fdy., sil. 1.75 to 2.25..	\$19.00 to \$20.00
No. 2X foundry, sil. 2.25 to 2.75..	19.50 to 20.50
No. 1X foundry, sil. 2.75 to 3.25..	20.50 to 21.50
Malleable, sil. up to 2.25.....	20.00
Basic	19.00
Lake Superior charcoal.....	27.28

Finished Iron and Steel.—Mill operations have been curtailed further for the holiday season, with the average probably not over 60 per cent. Prices of bars and shapes are being maintained, but little new business is coming out. In the reinforcing bar market, bids have been taken by the city on 250 tons for a new school. In the sheet market some automobile releases have created interest. On No. 24 gage black sheets 3c., Pittsburgh, is being done, and it is reported that lower than this has been offered.

Old Material.—Expected releases have not materialized, and one mill has let it be known that shipping orders on heavy melting steel will be delayed until after the first of the year. A few small sales of heavy melting steel have been made, and the market is looking better. Dealers expect that some new business will be placed within a week. While prices generally are nominal, the market is being maintained by old orders. Orders for selected No. 1 heavy melting steel at \$17.50 to \$17.75 are still out, and \$16.75 is reported to have been paid this week on fresh sales. Dealers have not been able to buy at prices permitting them to stock, and supplies at mills are not very large. Production of scrap has been curtailed 75 per cent.

We quote prices per gross ton, f.o.b. Buffalo, as follows:

Heavy melting steel.....	\$15.00 to \$15.50
Selected No. 1 heavy melting steel	16.50 to 17.00
Low phosphorus	18.00 to 19.00
No. 1 railroad wrought	14.00 to 14.50
Carwheels	16.00 to 16.50
Machine shop turnings	9.00 to 9.50
Mixed borings and turnings....	12.00 to 12.50
Cast iron borings	12.00 to 12.50
No. 1 busheling	15.00 to 15.50
Stove plate	14.50 to 14.75
Grate bars	12.00 to 13.00
Hand bundled sheets	10.50 to 11.50
Hydraulic compressed sheets....	15.00 to 15.50
No. 1 machinery cast	16.00 to 16.25
Railroad malleable	16.50 to 17.00
Iron axles	24.00 to 25.00
Steel axles	16.00 to 16.50
Drop forge flashings	13.00 to 13.50

Newfoundland Railroad Buys 15,000 Tons of Rails

TORONTO, ONT., Dec. 21.—Orders on hand and in prospect are sufficient to keep mill operations at upwards of 75 per cent well into 1927. The British Empire Steel Corporation, Sydney, N. S., has just received an order from the Newfoundland Government Railways for 15,000 tons of rails, which in addition to orders on hand from the Canadian National Railways will enable the rail mill to continue rolling until next spring.

Welding Used in Steel Building at Sharon

A demonstration of arc welding as applied to structural steel by the Westinghouse Electric & Mfg. Co., at its Sharon, Pa., plant on Dec. 15 and 16 was attended by several hundred architects, builders, contractors and steel men. The building is the first multi-story skeleton steel structure designed specifically for arc-welded construction. The floor dimensions of the building are 70 x 220 ft. and its height 80 ft.

One feature of the demonstration was that the welders on the job were formerly riveters who in a period of three weeks' intensive training learned all of the essentials of the new method of joinings.

The Sharon building required 700 tons of steel, while for a similar building of riveted construction 800 tons, it is stated, would have been needed. The steel was fabricated by the American Bridge Co. and the columns were welded in the shops before delivery to the field, just as in riveted construction. The girders of the new building are of special design for arc-welding and not an adaptation of former practice.

REINFORCING STEEL

Awards of the Week Exceed 3000 Tons and New Work Up for Bids Totals 2800 Tons

Small jobs make up the week's total of more than 3000 tons of concrete reinforcing bars awarded. Pending projects total about 2800 tons, the largest being 1000 tons for a store and apartment building in Seattle, Wash. Awards follow:

- AURORA, ILL., 100 tons, Aurora Hotel, to Kalman Steel Co.
- CHICAGO, 580 tons, Lucy Flowers Public School, to Joseph T. Ryerson & Sons.
- CHICAGO, 230 tons, apartment building at 20 East Delaware Street. John A. Armstrong, architect.
- CHICAGO, 150 tons, warehouse, for the Great Atlantic & Pacific Tea Co. at Fifty-seventh and Federal Streets.
- WAUKEGAN, ILL., 600 tons, filtration plant.
- REDWOOD CITY, CAL., 300 tons, Pacific Portland Cement Co., to an unnamed San Francisco jobber.
- OAKLAND, 100 tons, Finance Building, to W. S. Wetenhall Co., San Francisco.
- SAN FRANCISCO, 150 tons, Sherman School, to Gunn, Carle & Co., San Francisco.
- SAN FRANCISCO, 150 tons, Pacific Nash Motor Co., to Badt-Falk & Co., San Francisco.
- KALULUI, T. H., 130 tons, Pier 2, private letting through E. J. Lloyd, Honolulu, general contractor.
- CHICAGO & ALTON, 500 tons, 1927 requirements, to Concrete Engineering Co.
- OTTAWA, ILL., 150 tons of rail steel, United States Silica Co., to Calumet Steel Co.
- AKRON, 140 tons, Firestone Tire & Rubber Co.

Reinforcing Bars Pending

Inquiries for reinforcing steel bars include the following:

- BROOKLYN, 200 tons, factory building, P. L. Andrews Corporation, Russell G. Cory, architect.
- NEW YORK, 100 tons, viaduct, Riverside Drive; general contract not let.
- ST. LOUIS, 100 tons for the municipal waterworks.
- ST. LOUIS, 400 tons, foundation for Missouri Pacific office building.
- SEATTLE, WASH., 1000 tons, store and apartment building.
- SAN JOSE, CAL., 125 tons, Medico-Dental Building; bids about Dec. 23.
- TURLOCK, CAL., 175 tons, Don Pedro power plant for the Turlock Irrigation District; bids Dec. 30.
- CLEVELAND, 700 tons, warehouse, Kroger Grocery & Baking Co.

Reduced Holiday Operations in Mahoning Valley

YOUNGSTOWN, Dec. 21.—Mahoning Valley iron and steel operations are settling to a 60 per cent level for the remainder of the year. Except for departments requiring continuous operation, such as steel plants, by-product coke ovens and blast furnaces, other departments will suspend this week for the Christmas holiday. Scheduled sheet mills will as a rule operate four to four and one-half days.

Of 127 sheet mills, 97 were scheduled to start the week; 28 of 53 independent open-hearth furnaces are active and 13 of 18 pipe mills, an increase of one. The Carnegie Steel Co. and the Sharon Steel Hoop Co. report operation of their steel plants at 75 per cent and finishing mills at 50 per cent. In this district the Youngstown Sheet & Tube Co. is averaging 55 to 60 per cent, and the Republic Iron & Steel Co. likewise. The Newton Steel Co., idle one week recently for overhauling and to permit the accumulation of orders, is now operating 14 to 16 of its 20 hot mills at its Newton Falls plant.

Steel company managers and superintendents have reduced unemployment to a minimum, although there is considerable irregularity and intermittency in the current employment situation.

NON-FERROUS METAL MARKETS

The Week's Prices		Dec. 21	Dec. 20	Dec. 18	Dec. 17	Dec. 16	Dec. 15
	Lake copper, New York.....	13.75	13.75	13.75	13.75	13.75	13.75
	Electrolytic copper, N. Y.*..	13.32½	13.32½	13.32½	13.30	13.35	13.35
	Straits tin, spot, New York..	68.00	68.25	68.00	68.00	69.00	69.25
	Lead, New York.....	7.80	7.80	7.80	7.80	7.80	7.80
	Lead, St. Louis.....	7.65	7.65	7.65	7.65	7.65	7.65
	Zinc, New York.....	7.37½	7.37½	7.37½	7.40	7.40	7.37½
	Zinc, St. Louis.....	7.02½	7.02½	7.02½	7.05	7.05	7.02½

*Refinery quotation; delivered price ¼c. higher.

NEW YORK, Dec. 21.—The holiday season is having its effect and the markets are all exceedingly quiet. Copper prices have eased off a little, but changes in tin have been slight. Lower prices are recorded in lead, but zinc quotations have remained practically stationary.

Copper.—The market could hardly be more dull or uninteresting. Demand for electrolytic copper is very light. Consumers are not in need of buying just now after the heavy purchases recently, nor are producers in a position where they have to force the market. The situation is thus a stand-off and the market a drifting one. Such business as is being done is going at a concession from the price of some of the leading producers of 13.62½c., delivered in the Connecticut Valley. Sales have been made as low as 13.55c. to 13.60c., delivered, and the quotation today is 13.57½c. for prompt to March delivery. The official price of Copper Exporters, Inc., is unchanged at 13.95c., c.i.f. Hamburg. The export market is very quiet. Lake copper is quoted at 13.75c., delivered.

Tin.—Despite an appearance of quietness, between 1100 and 1200 tons of tin is estimated to have been sold last week. Most of this business was between dealers, with consumers hardly participating. One London house last week was quite keen for orders and is reported to have sold for distant positions. On Friday, Dec. 17, the market became easy for the nearby positions with plenty of sellers and no buyers. Considerable metal,

ex-steamer at dock, was offered. As a result of this situation the premium on the early positions was reduced to about ¼c. between spot and February and to about 1c. between spot and March, as contrasted with a premium of 3c. to 4c. a short time ago. This may be explained by more ample supplies and a slackening in demand. It is estimated that there will be an increase in the visible supply of about 1000 tons this month, shipments from the Straits being figured at about 7000 tons, which, with the 6000 tons in November, brings the total to 13,000 tons for the two months. Yesterday, Monday, the market was quiet with about 150 tons changing hands between dealers, and today there have been no features, with spot Straits tin quoted at 68c., New York. In London today spot standard was quoted at £307, future standard at £298 and spot Straits at £314, all about £1 per ton less than a week ago. The Singapore price today was higher at £310. Arrivals thus far this month have been 4965 tons, with 6190 tons reported afloat.

Lead.—The American Smelting & Refining Co. on Dec. 15 reduced its contract price from 7.90c. to 7.80c., New York, and it has remained there ever since. Independents in the West are quoting 7.62½c. to 7.67½c., St. Louis. Demand is satisfactory, but the market is quiet and there are no features.

Zinc.—The market for prime Western has changed but little during the week. The situation is similar to that in copper. Demand is light and producers are not pressing for sales. Some are adhering to 7.05c., St. Louis, while others will sell at as low as 7c. We quote the market at 7.02½c., St. Louis, or 7.37½c., New York.

Antimony.—The market is a little firmer, with Chinese metal quoted today for all positions at 13c., New York, duty paid.

Nickel.—Ingot nickel in wholesale lots is quoted at

Metals from New York Warehouse

Delivered Prices per Lb.

Tin, Straits pig.....	70.00c. to 71.00c.
Tin, bar	72.00c. to 73.00c.
Copper, Lake	14.50c.
Copper, electrolytic.....	14.25c.
Copper, casting	13.75c.
Zinc, slab	7.75c. to 8.25c.
Lead, American pig.....	8.40c. to 8.90c.
Lead, bar	10.90c. to 11.90c.
Antimony, Asiatic	14.50c. to 15.50c.
Aluminum, No. 1 ingot for remelting (guaranteed over 99 per cent pure).....	29.00c. to 30.00c.
Babbitt metal, commercial grade.....	30.00c. to 40.00c.
Solder, ½ and ½.....	44.00c. to 45.00c.

Metals from Cleveland Warehouse

Delivered Prices per Lb.

Tin, Straits pig.....	74.38c.
Tin, bar	76.38c.
Copper, Lake	14.75c.
Copper, electrolytic	14.75c.
Copper, casting	14.25c.
Zinc, slab	8.50c.
Lead, American pig.....	8.50c.
Antimony, Asiatic	17.50c.
Lead, bar	10.75c.
Babbitt metal, medium grade.....	21.75c.
Babbitt metal, high grade.....	78.25c.
Solder, ½ and ½.....	43.75c.

Rolled Metals from New York or Cleveland Warehouse

Delivered Prices, Base per Lb.

Sheets—	
High brass	18.87½c. to 19.87½c.
Copper, hot rolled.....	22.50c. to 23.50c.
Copper, cold rolled, 14 oz. and heavier,	24.75c. to 25.75c.

Seamless Tubes—

Brass	23.75c. to 24.75c.
Copper	24.50c. to 25.50c.
Brazed Brass Tubes.....	26.87½c. to 27.87½c.
Brass Rods	16.62½c. to 17.62½c.

From New York Warehouse

Delivered Prices, Base per Lb.	
Zinc sheets (No. 9), casks.....	12.75c. to 13.00c.
Zinc sheets, open.....	13.25c. to 13.50c.

Non-Ferrous Rolled Products

Mill prices on bronze, brass and copper products have not changed since Nov. 25. Lead full sheets and zinc sheets are still holding to the reductions of Nov. 4 and Dec. 8 respectively.

On Copper and Brass Products, Freight up to
75c. per 100 Lb. Allowed on Shipments
of 500 Lb. or Over

Sheets—

High brass	18.62½c.
Copper, hot rolled.....	22.25c.
Zinc	11.50c.
Lead (full sheets)	11.75c. to 12.00c.

Seamless Tubes—

High brass	23.50c.
Copper	24.25c.

Rods—

High brass	16.37½c.
Naval brass	19.12½c.

Wire—

Copper	15.62½c.
High brass	19.12½c.

Copper in Rolls	21.12½c.
Brazed Brass Tubing.....	26.62½c.

Aluminum Products in Ton Lots

The carload freight rate is allowed to destinations east of the Mississippi River and also allowed to St. Louis on shipments to destinations west of that river.

Sheets, 0 to 10 gage, 3 to 30 in. wide.....	37.50c.
Tubes, base	48.00c.
Machine rods	34.00c.

Rolled Metals, f.o.b. Chicago Warehouse

(Prices Cover Trucking to Customers' Doors in City Limits)

Sheets—		Base per Lb.
High brass	.....	18½c.
Copper, hot rolled	.....	22.25c.
Copper, cold rolled, 14 oz. and heavier	.....	24.50c.
Zinc	.....	12.25c.
Lead, wide	.....	11.25c.
Seamless Tubes—		
Brass	.....	23.50c.
Copper	.....	24.25c.
Brazed Brass Tubes	.....	26½c.
Brass Rods	.....	16½c.

35c., with shot nickel at 36c. and electrolytic nickel at 39c. per lb.

Aluminum.—Virgin metal, 98 to 99 per cent pure, is quoted at 26½c. to 27c. per lb., delivered.

Non-Ferrous Metals in Chicago

Dec. 21.—This market is quiet and the prices of tin and antimony are lower. Copper is weak because of moderate consumption and growing stocks. The old metal market is dull and without feature.

We quote in carload lots: Lake copper, 13.85c.; tin, 69.50c.; lead, 7.80c.; zinc, 7.15c.; in less than carload lots, antimony, 14.50c. On old metals we quote copper wire, crucible shapes and copper clips, 10.75c.; copper bottoms, 9.50c.; red brass, 9.25c.; yellow brass, 7.50c.; lead pipe, 6.50c.; zinc, 4.75c.; pewter, No. 1, 35c.; tin foil, 43.50c.; block tin, 52c.; aluminum, 16.50c.; all being dealers' prices for less than carload lots.

Business Analysis and Forecast

(Concluded from page 1777)

prices will gradually run out and iron prices will tend to conform.

Relation of Prices Within the Industry

AS the price structure in the steel industry is not entirely satisfactory, it probably will require readjustment during the course of the next few months. The prices of billets, bars and wire nails, as shown in the third chart, continue stable and are almost exactly in a normal relationship. If this group be considered the core of the situation, however, it appears that sheets are too low (which is all too common), while pig iron and steel scrap are too high.

To be "right" in comparison with steel prices, pig iron will have to fall back considerably—perhaps to about where it was in July, 1925, when the average for the month on THE IRON AGE composite basis was \$18.96. It would seem that scrap would also have to decline to \$16 or lower, while coke prices would need to be reduced to about \$2.50.

Of course, the readjustment might take place in part through advances in steel, but this seems now hardly likely. Some allowance, too, must be made for increased efficiency of production, which has made it possible to maintain a fair margin of profit with a smaller spread between the raw materials and the product. But, even so, present margins must be unsatisfactory to most steel producers, and especially so in the case of companies which are not integrated as to the stages of production below billets.

It is fair to conclude that the outlook is for still lower coal and coke prices. The excessive rate of pig iron production seems to presage a further decline in that quarter, and keen competition and price shading are already in evidence.

As to scrap, however, it appears difficult to draw definite conclusions at present. All of our barometers bearing on that material indicate a tendency toward higher prices in a few months, and the supply situation as to some of the most desired grades appears strong. Yet, for the near future, the decline in steel making and the easing in pig iron prices would ordinarily seem sufficient to hold scrap prices down, and this seems especially true in view of the rather high level of the scrap markets in comparison with those for billets and pig iron.

Old Metals, Per Pound, New York

The buying prices represent what large dealers are paying for miscellaneous lots from the smaller accumulators, and the selling prices are those charged consumers after the metal has been properly prepared for their uses.

	Dealers' Buying Prices	Dealers' Selling Prices
Copper, heavy crucible	11.00c.	12.75c.
Copper, heavy and wire	10.75c.	11.75c.
Copper, light and bottoms	9.00c.	10.50c.
Brass, heavy	6.75c.	8.25c.
Brass, light	6.00c.	7.50c.
Heavy machine composition	8.50c.	10.00c.
No. 1 yellow brass turnings	8.25c.	8.87½c.
No. 1 red brass or composition turnings	8.00c.	9.00c.
Lead, heavy	6.50c.	7.00c.
Lead, tea	4.75c.	5.50c.
Zinc	4.25c.	4.75c.
Sheet aluminum	15.50c.	17.50c.
Cast aluminum	15.50c.	17.50c.

Prizes for Essays on Arc Welding

Prizes amounting to \$17,500 are offered by J. F. Lincoln, vice-president of the Lincoln Electric Co., Cleveland, for the best papers submitted on arc welding.

The council of the American Society of Mechanical Engineers will act as custodian of the awards. Competition will be world-wide. The first prize is \$10,000, the second, \$5,000 and the third \$2,500. The papers in competition are to be furnished in duplicate to Calvin W. Rice, secretary of the A. S. M. E., 29 West Thirty-ninth Street, New York, before Jan. 1, 1928.

The announcement of these prizes was made Dec. 10, by Charles M. Schwab, the new president of the A. S. M. E., following a meeting of the society's council. Mr. Schwab's statement was, in part, as follows:

"The replacement of cast iron and riveted steel with arc-welded structural steel is probably the next great step forward to be taken by industry.

"When it is considered that each pound of structural steel costs only one-third as much as cast iron, its economic advantage becomes self-evident. In order to obtain this great advantage of steel over cast iron much work must be done in design and in the application of arc welding. Part of this work already has been done with enormous economies, but much more remains.

"In order to stimulate active thought along this line and to encourage the growth of a new industrial process, the Lincoln Electric Co. is offering to the American Society of Mechanical Engineers the sum of \$17,500 to be awarded for papers submitted on arc welding.

"Originality of design is preferable either in the method of applying the weld or in the design of the welding parts for their arrangement. Designs which are of no practical use will only be considered in case they include suggestions which could self-evidently be applied in other ways than those suggested.

"Attention is called to the fact that these prizes are offered with the sincere desire to promote the whole art of arc welding and to reduce the cost of carrying out mechanical designs."

Alan Wood Iron & Steel Co. to Dismantle Old Mill

The Alan Wood Iron & Steel Co., Philadelphia, will dismantle what has long been known as the J. Wood department of its Schuylkill Iron Works at Conshohocken, Pa. This mill was built originally in 1832 and was operated by J. Wood & Brothers. It was acquired many years ago by the Alan Wood Iron & Steel Co. The building houses two sheet mills, which will be replaced by new equipment in the more modern plant of the Schuylkill Iron Works, which is the sheet-making department of the company.

The Hillside Fluor Spar Mines, Chicago, with mines at Rosiclare, Ill., has extended its sales agreement with Pilling & Co., Inc., to include the Pittsburgh district. Pilling & Co. thus become the sole selling agent of Hillside fluorspar in the Eastern consuming districts.

PERSONAL

C. W. Matheson, recently sales manager Oakland Motor Car Co., has been made vice-president and director of sales for the Kelvinator Co., Inc. He was associated with Dodge Brothers, Inc., for a number of years in a sales capacity.

James Lincoln Ashley, vice-president and treasurer of the International Nickel Co., New York, has been elected a trustee of the Union Dime Savings Bank, New York.

John O. Rinek, formerly manager of the Atha Works and of the Spalding & Jennings Works of the Crucible Steel Co. of America, has been appointed assistant general manager of the Universal Steel Co., Bridgeville, Pa.

R. L. Stanton, recently added to the plant staff of the American Brown Boveri Electric Corporation, at Camden, N. J., as application engineer in the blower section, was graduated from the University of Pennsylvania in 1914, and has had experience on sub-station and power plant design as well as in railroad computations and power studies. Frank T. Horan, recently made detailer on oil circuit breakers in the design section of the electro-mechanical division, was formerly employed in the company's drafting department. Previously he was associated for 11 years with the General Electric Co., Schenectady, N. Y., where he specialized in alternating current motors and generators, electric furnaces and switchboard equipment.

Maurice Nicholls, works manager of the Irving Iron Works Co., Long Island City, New York, sails on the Olympic for England, Dec. 27, to open up the English branch of the company. Prior to going with the Irving Iron Works Co., Mr. Nicholls was with the Diamond Power Specialty Co., and since his connection with the former company he has held the positions of assistant production manager, production manager and works manager. He is A. S. M. E. representative on the National Walkway Surface Code Committee.

George M. Bakewell has been made head of the export department, Bunting Brass & Bronze Co., Toledo, Ohio. He was formerly overseas representative of the Champion Spark Plug Co., Toledo. Before joining the Bunting company Mr. Bakewell completed his third trip around the world, covering 178,000 miles and visiting nearly every place where there is any form of commerce or industry. He is organizing his department for overseas business. He will have headquarters at 254 West Fifty-fourth Street, New York.

J. I. Burgess resigned Dec. 15 as Ohio sales representative of the machinery department of the National Acme Co., Cleveland, to become sales manager of the National Pipe Products Co., Rochester, Pa.

James E. Auten has been promoted to general manager of the Milwaukee division, Nash Motors Co., Kenosha, Wis. He joined the Nash organization on July 16, 1923, as works manager at Milwaukee.

Benjamin J. Van Horn, manager of crane sales for the Harnischfeger Sales Corporation, Milwaukee, was tendered a banquet by the P & H Old Timers' Club on Dec. 10, in celebration of 30 years' association with the company. He started work in 1896 as a stenographer.

Stewart Scrimshaw, director of industrial relations, Kearney & Trecker Corporation, Milwaukee, and professor of industrial relations at Marquette University, Milwaukee, has been awarded the degree of doctor of philosophy in economics by the regents of the University of Wisconsin, Madison. Dr. Scrimshaw is a

graduate of Ohio Wesleyan University, Delaware, Ohio, and did post-graduate work at Wisconsin. In this connection he prepared a thesis, "Apprenticeship Administration," which will be published in book form next spring. He has been with Kearney & Trecker since 1920, and on the Marquette faculty since 1922.

Fred A. Geier, president Cincinnati Milling Machine Co., Cincinnati, has been appointed a member of the board of directors of the Cincinnati branch, Federal Reserve Bank.

F. A. Bennett, formerly with the Remington Arms Co., New York, is now associated with the Marshall & Huschart Machinery Co., 571 Washington Boulevard, Chicago.

Clyde H. Burgston has been promoted to assistant superintendent of the Union Malleable Iron Works, East Moline, Ill.

Robert S. Glenn, manager of the New York store of the Cleveland Twist Drill Co., has been appointed assistant to the president, Jacob D. Cox, Jr., with headquarters in Cleveland. Oliver B. Hansen, who has been the company's representative in the southeastern territory, with headquarters in Atlanta, Ga., has been appointed manager of the New York store, at 30 Reade Street, succeeding Mr. Glenn. Irving P. Farnum, for several years representative covering one of the territories served by the Chicago store of the Twist Drill company, has been appointed representative in the Southeast to succeed Mr. Hansen.

L. A. McElroy, president United States Horseshoe Co., Erie, Pa., who recently purchased the Medicine Hat Works of the Canadian Western Steel Corporation, Medicine Hat, Canada, has sold this plant to the Alberta Steel Co., Ltd., Alberta, Canada. He has become president of the latter organization. The rolling mill of the Medicine Hat plant is in operation and it is planned in the next six months to add an open-hearth furnace.

H. D. Gentry, formerly associated with the Moline Tool Co., Moline, Ill., and with the National Automatic Tool Co., Richmond, Ind., is now connected with the sales department of the Marshall & Huschart Machinery Co., 571 Washington Boulevard, Chicago.

Jesse H. Neal, after 11 years of effective service as executive secretary of the Associated Business Papers, has resigned. In January he leaves on a six months' Mediterranean trip. The executive committee of the Associated Business Papers has created a new office, that of managing director and Frederick M. Feiker has been appointed to act in that capacity. After Jan. 1 the headquarters of the association will be located at 52 Vanderbilt Avenue, New York.

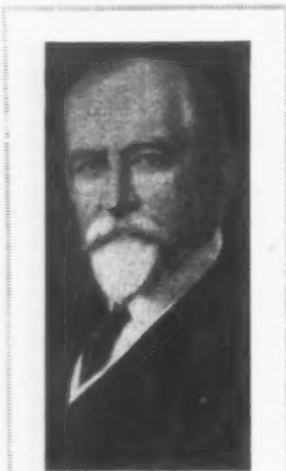
Paul Wick, vice-president and a director of the Falcon Steel Co., Niles, Ohio, has been elected a director of the General Fireproofing Co., Youngstown, to fill a vacancy left by the death of M. I. Arms, late chairman. The new chairman has not been elected, nor has a successor been named for S. S. French, who resigned recently as vice-president and general manager to become president of the Berger Mfg. Co., Canton, Ohio.

Harry Coulby, member of Pickands, Mather & Co., Cleveland, and chairman of the executive committee of the Central Alloy Steel Corporation, Massillon, Ohio, sailed Dec. 15 for a several weeks' trip to Europe.

The Seamless Steel Equipment Corporation, 26 Broadway, New York, has been organized with a capital of 500 shares of no par value stock for the purpose of handling the sales in this country of the seamless steel products of Press & Walzwerk A. G., Reisholz, Dusseldorf, Germany. The German company operates an open-hearth steel plant, a press and forging works, including wheel and axle workshops.

OBITUARY

CHARLES FREDERICK BROOKER, chairman of the board of the American Brass Co., New York, died Dec. 20 at a hotel in Daytona Beach, Fla., following a long illness. Born in 1847 at Litchfield, Conn., he attended schools in that city and Torrington, and entered the brass business with the Coe Brass Mfg. Co., Torrington, Conn., in 1863. An outstanding achievement of his career was the bringing together of the Waterbury Brass Co., Benedict & Burnham and Holmes, Booth & Haydens Co., all of Waterbury; the Ansonia Brass & Copper Co. and the Coe Brass Co., both of Ansonia, and the Coe Brass Co., Torrington, under one organization which became the American Brass Co. He was president of this company from 1900 until 1920, and since 1920 had been chairman of its board of directors. During the World War he served as a member of the brass committee of the National Council of Defense. At the time of his death he was a director of the Anaconda Copper Mining Co., the Chile Copper Co., the Chile Exploration Co., the Andes Copper Mining Co., the Mines Investment Co., the United States Smelting, Refining & Mining Co. and numerous civic, political and social organizations. In 1911 Yale University gave him a degree in recognition of his prominence in the non-ferrous metals industry.



C. F. BROOKER

A. H. HITCHCOCK, president of the company which publishes the *Hitchcock Machine Tool Blue Book* and the *Hitchcock Woodworking List*, Chicago, died suddenly on Dec. 10 at Mountain Lakes, N. J., aged 71 years.

JAMES G. GODFREY, vice-president Albee-Godfrey Whale Creek Co., Inc., Brooklyn, ornamental iron worker, was instantly killed by a fall to the bottom of one of the ventilating wells in the new Hudson-Manhattan vehicular tunnel on Dec. 20. He had been active in the engineering work of the company, and was on a tour of inspection of one of its installations at the time of the accident.

J. L. ADAMS, president Adams Steel Co., Cincinnati, died of apoplexy at his home in that city Dec. 18. He had been identified with the steel business in Cincinnati for many years, having been district sales manager successively for the Cambria Steel Co., the Midvale Steel & Ordnance Co. and the Bethlehem Steel Co. Several years ago he formed the J. L. Adams Co., later called the Adams Steel Co., which was the direct sales agent in Cincinnati for a number of steel companies, including the Mansfield Sheet & Tinsplate Co. and the Apollo Steel Co.

JAMES KING HOYT, senior partner in A. Milne & Co., 745 Washington Street, New York, who conduct an iron and steel warehouse, died at his home in that city on Dec. 15. He was 68 years of age.

WILLIAM CORRY, for 22 years vice-president Chrome Steel Works, Elizabeth, N. J., died in Cincinnati on Dec. 13 at the age of 84 years. He was a member of the American Society of Mechanical Engineers.

JOHN H. PALMER, a member of the firm of Ogden & Wallace, 577-583 Greenwich Street, New York, dealer

in iron and steel, died Dec. 13 at his home in East Orange, N. J. He entered the iron warehouse business in 1856 with Elliott & Holden, then located at Beekman and Cliff Streets. In 1862 he became associated with William Oothout & Brothers, 3-7 Cliff Street, and upon the retirement from business of that company in 1876 he entered the employ of Ogden & Wallace, becoming a partner in 1899. He was 85 years of age, and actively engaged in business until the time of his death.

HARRY M. GILES, general superintendent of the South Philadelphia plant, Westinghouse Electric & Mfg. Co., died Dec. 14 at his home in Swarthmore, Pa. He was 57 years old, and had been associated with the Westinghouse company since 1900.

VICTOR CARLSTROM, superintendent Worcester Stamped Metal Co., Worcester, Mass., died Wednesday, Dec. 15, at a doctor's office in Shrewsbury as the result of an automobile accident. He was born in 1891 at Christiania, now Oslo, Norway, and came to this country when 17 years old. Before going with the Worcester company he was associated with the American Wire Wheel Co., Buffalo.

DREW E. BOOKER, superintendent South Chicago plant, Youngstown Sheet & Tube Co., died Dec. 13 at his home in South Chicago.

R. A. BROWNE, secretary-treasurer of the Riverside Iron Co., 107th Street and Burley Avenue, Chicago, died Dec. 12, following an illness of four months. He was 29 years old.

GEORGE W. NEILL, president Neill Foundry, Portsmouth, Ohio, died at his home in that city Dec. 5. For many years he had been associated with his father in the operation of a stove foundry and upon the latter's death assumed control of the business. He was 75 years of age.

HEAVY EXPORT MOVEMENT

Largest Outgoing Tonnage in Nearly Three Years—Pipe, Rails and Galvanized Sheets Gain

WASHINGTON, Dec. 21.—Aggregating 219,830 gross tons, exports of iron and steel products in November of the present year were the highest since January, 1924, when the total was 247,343 tons. The previous record month of the present year was July, with a total of 194,717 tons. The November total represented a gain of 27 per cent, or 47,760 tons, over October exports.

The heaviest gain in November over October was made in boiler tubes and welded pipe, with a total of 30,225 tons for the former month against 19,606 tons in October. Large gains were made also in steel rails and galvanized sheets, November shipments of these products being 23,385 tons and 19,223 tons respectively.

For the 11 months of the present year, exports have aggregated 1,968,859 tons, against 1,620,363 tons for the corresponding period of 1925. This makes it evident that total exports for the calendar year will exceed the 2,000,000-ton mark by a good margin, seeing that the 11 months' total of exports lacks only 31,141 tons of that total. Of the November exports, 81,485 tons went to Canada.

Unusually Large River Shipment of Steel

One of the largest river shipments of steel products since the use of the inland waterways for down-river movement of steel was revived on a large scale five years ago left the Steubenville, Ohio, works of the Wheeling Steel Corporation Dec. 20. It included 10,000 tons of pipe and sheets produced at Steubenville and will be increased by 800 tons of wire products from the company's Portsmouth, Ohio, works when the tow reaches that point. The entire shipment is consigned to the company's warehouse at Memphis.

Machinery Markets and News of the Works

BUSINESS IS SPOTTY

Machine Tool Orders Range from Fair in Some Sections to Poor in Others

Inquiries Continue to Reach the Trade in Numbers Indicating Better Prospects for January

MACHINE tool buying so far in December has ranged from fairly good in some sections of the country to rather poor in others. From Chicago and Cincinnati come reports indicating that orders are better than had been expected, but New England and other parts of the East are comparatively dull.

New York

NEW YORK, Dec. 21.

THERE is a fair volume of inquiry for single tools, but prospective buyers are beginning to delay action until after the first of the year. Despite the present quietness outstanding inquiry is expected by most sellers to result in an early resumption of activity, following the holiday season. In addition to a number of single tool purchases in the New York district, one company has closed on six small drilling machines in the past week.

Among other industrial purchases in this district were three bench lathes by the Victor Talking Machine Co., Camden, N. J.; an automatic milling machine by the Edison Phonograph Works, Orange, N. J., and a hand milling machine by the Singer Mfg. Co., Elizabethport, N. J.

Other tool purchases the past week included three 24-in. shapers by the Illinois Steel Co., Chicago; a thread milling machine by the American Tool Works Co., Cincinnati; a 16-in. x 10-ft. center geared head lathe by the Potomac Edison Co., and a special floor grinder by the American Car & Foundry Co., Berwick, Pa. A Detroit manufacturer has purchased three automatic and two hand milling machines; a Newton, Iowa, washing machine maker two thread milling machines; a brass works at Duluth, Minn., a car box borer; a Milwaukee manufacturing plant an automatic milling machine. Among the railroads, the Norfolk & Western closed on a 27-in. x 22-ft. lathe and a unit of 8-ft. plate bending rolls.

At the recent National Exposition of Power and Mechanical Engineering in Grand Central Palace, New York, a number of sales were reported. The Triplex Machine Tool Co., New York, sold two jig boring machines on exhibition to the R. G. Smith Tool & Mfg. Co. and another to a New Hampshire textile machinery company. Sales during the week included three gear hobbing machines, two filing machines and a bench lathe.

Plans are being arranged by the Chevrolet Motor Co., Detroit, for additions to its assembling plant at Tarrytown, N. Y., comprising new buildings and equipment to cost more than \$3,500,000. Work will begin in January.

Nathan Korn, 110 West Fortieth Street, New York, architect, is completing plans for a four-story automobile service, repair and garage building at 66-68 Cortlandt Street and 170-74 Greenwich Street, to cost about \$225,000 with equipment.

The Continental Doll & Toy Co., New York, has leased space in the building at 64-68 Wooster Street for a new toy-manufacturing plant.

The Metropolitan Glue Co., Park Avenue and 144th Street, New York, is considering the replacing of its plant,

As a whole, December machine tool business may show a slight falling off from the November rate, but a few of the larger manufacturers of tools report gains of 20 or 25 per cent.

The Norfolk & Western Railroad has begun the placing of orders against a large list of requirements, on which prices were obtained months ago. In general railroad buying is not active, but there is an expectation in the trade that several roads will come into the market for fairly large lots early in the new year.

Automobile manufacturers have not come back into the market to any extent in preparation for 1927, but some orders are coming from that source, one being for six engine lathes.

occupying leased quarters, destroyed by fire Dec. 11, with loss estimated at \$100,000 with machinery.

The Hobart Mfg. Co., Troy, Ohio, manufacturer of electrically operated meat choppers and other electric food-preparing machinery, has concluded negotiations for the purchase of the plant and business of the Crescent Washing Machine Co., New Rochelle, N. Y., manufacturer of electrically-operated dish-washing and metal washing equipment. The new owner plans to maintain operations at the New Rochelle factory and is arranging a sale of securities for general expansion.

Frank S. Parker, 280 Madison Avenue, New York, architect, has filed plans for a ten-story automobile service, repair and garage building, 100 x 125 ft., at 533-41 West Fifty-seventh Street, to cost about \$350,000 with equipment.

The Long Island Lighting Co., 50 Church Street, New York, has plans under way for a new electric power house at Ocean Beach, L. I., to cost in excess of \$75,000 with equipment.

Hess & Weiner, Inc., 209 West Twenty-sixth Street, New York, novelty jewelry manufacturer, has leased space in the building at 6-8 West Thirty-second Street for a new plant.

The Aerovox Wireless Corporation, 489 Broome Street, New York, manufacturer of radio equipment, has leased a floor in the building at 70 Washington Street, Brooklyn, totaling 20,000 sq. ft., for a new plant.

W. H. Everill, 43 Exchange Place, New York, architect, has filed plans for an eight-story automobile service, repair and garage building, 200 x 305 ft., at 109-31 West Fiftieth Street, extending to 110-30 West Fifty-first Street, estimated to cost more than \$2,000,000 with equipment.

The Clifton Paper Mills, Ackerman Avenue, Clifton, N. J., has awarded a general contract to William Hassan, 625 Main Avenue, Passaic, N. J., for a one-story building to be used as a machine department. It will cost about \$40,000.

The Federal Terra Cotta Co., Woodbridge, N. J., has plans under way for extensions and improvements, including additions to six buildings and the construction of three additional structures, the latter to be equipped as a finishing department, pressing shop and kiln department. The installation of a tunnel kiln is also under consideration. It is purposed to provide equipment and facilities for employment of about 200 additional men, making a total working force of 600 operatives. The cost is estimated in excess of \$150,000.

The Mono Service Co., Verona Avenue and Oraton Street, Newark, N. J., manufacturer of paper containers, has work under way on a new three-story plant unit, 113 x 140 ft., to cost in excess of \$100,000 with equipment. The company has also secured additional land on Oraton Street for future expansion. J. B. Thompson is president, and Elbert Beeman, general manager.

The Safety Cable Co., Bergen Point, Bayonne, N. J., manufacturer of insulated wires and cables, has awarded a general contract to Walter Kidde & Co., Inc., 90 West Street, New York, for three one-story units, estimated to cost \$250,000 with equipment.

Chicago

CHICAGO, Dec. 20.

MACHINE tool dealers in this district report an increased volume of sales. This does not indicate a more active market but, rather a move on the part of some buyers to place a few tools which have been pending. Generally, the market is quiet, December sales being considerably below the average of those in November. Inquiry is unusually light and with old quotations either being definitely set aside or awarded little pending business will be carried into the new year. Makers of electrical equipment are probably the most active buyers of machine tools at this time. Many industrial plants, that operate machine shops for maintenance work, prefer at this time to award work to jobbing shops rather than add to their own equipment. The Mechanical Mfg. Co., Chicago, is still in the market, but it is reported that the International Harvester Co. has postponed all tool purchases until after the turn of the year.

Contract has been let by the Public Service Co. of Northern Illinois, Chicago Trust Building, Chicago, to T. D. Hobson & Son, Harvey, Ill., for a one-story and basement equipment storage and distributing plant, 270 x 450 ft., at Maywood, Ill., to cost in excess of \$85,000. H. Von Holst, 79 West Monroe Street, Chicago, is architect and engineer.

The Standard Oil Co., 910 South Michigan Avenue, Chicago, is considering the erection of a new two-story storage and distributing plant at Bloomington, Ill., to cost \$100,000 with equipment.

The Westinghouse Electric & Mfg. Co., East Pittsburgh, has concluded arrangements for the purchase of the plant and business of the Kaestner & Hecht Co., 1500 North Branch Street, Chicago, manufacturer of elevators and mechanisms. The acquisition includes two seven-story structures and a machine shop. The purchasing company proposes to maintain production, with early expansion, and will continue the company as a subsidiary.

The Northwestern Collapsible Carrier Co., 2920 Talmadge Avenue, Minneapolis, Minn., manufacturer of conveying equipment, is considering plans for a new two or three-story factory, to cost close to \$50,000 with machinery. Charles A. Woolsey is president.

The United States Gypsum Corporation, 205 West Monroe Street, Chicago, has preliminary plans for extensions and improvements in its mill at Loveland, Colo., estimated to cost \$300,000 with machinery.

The Board of Education, City Hall, Minneapolis, Minn., is completing plans for the construction of the first unit of the proposed vocational high school on Third Avenue, estimated to cost \$650,000 with equipment. It is proposed to ask bids on a general contract early in the spring. George F. Wamrath is business manager.

The Strong-Scott Mfg. Co., 413 South Third Street, Minneapolis, Minn., manufacturer of flour mill machinery, will ask bids in about 30 days for a two-story and basement addition, 100 x 500 ft., to cost \$175,000. Larson & McLaren, Baker Building, are architects.

The City Council, Ortonville, Minn., is asking bids until Jan. 3, for one motor-driven turbine pumping unit for the municipal waterworks. N. J. Wilkins is city clerk.

The Brown Sheet Iron & Steel Co., Minneapolis, Minn., manufacturer of steel tanks and barrels, has started the erection of an addition, 75 x 75 ft., to cost \$25,000.

Buffalo

BUFFALO, Dec. 20.

THE Taggart Brothers Co., Morrison Street, Watertown, N. Y., manufacturer of paper bags, etc., has secured property on the lake front at Oswego, N. Y., as a site for a new mill on which construction will start in the spring. It will consist of two units, one for the production of paper, and the other for the manufacture of paper bags for cement and other heavy duty. The entire project is estimated to cost \$1,500,000. B. B. Taggart heads the company.

The Curtiss Aeroplane & Motor Co., 74 Kall Street, Buffalo, is arranging a general expansion program for the coming year and proposes to double production. The company has practically completed the removal of its plant at Garden City, L. I., to the Buffalo works, where operations will be concentrated in the future. Roy M. Keyes is president.

The Moffat Flour Mills, Inc., 1025-35 Seneca Street, Buffalo, is completing plans for a new grain elevator and expects

to begin work early next year. It is reported to cost more than \$400,000 with screening, elevating, conveying and other machinery. The Monarch Engineering Co., Chamber of Commerce Building, is engineer. Henry J. Rengel is secretary and treasurer.

The C. J. Lundstrom Mfg. Co., Little Falls, N. Y., manufacturer of sectional bookcases, office furniture, etc., is said to have closed arrangements for a lease of property at Kansas City, Mo., for a new factory branch.

The Power Specialty Co., Dansville, N. Y., manufacturer of power plant equipment, is considering the erection of an addition for the manufacture of coal pulverizers, estimated to cost close to \$150,000 with machinery. Headquarters of the company are at 111 Broadway, New York. Charles H. Reigart is plant superintendent.

Bearium Bearings, Inc., Buffalo, manufacturer of lead-bronze bearings under a special process, is arranging an expansion program to include the establishment of factory branches, with foundries and finishing departments, at Pittsburgh and Chicago. The company is disposing of a capital stock issue of 10,000 shares of stock, no par value, a portion of the fund to be used for the extensions. The company is affiliated through its directorate with the Walworth Co., Boston, manufacturer of steam specialties, etc., Howard Coonley, president of the last noted company being chairman of the board of the Bearium organization. The Walworth Co., additionally, has been producing castings for the Bearium company, of which Henry G. Pagani, Buffalo, is president and general manager.

The Fetter Steel Barrel Corporation, Military Road and Lansing Avenue, Buffalo, is inquiring for a 15,000 to 35,000-lb. power press, about 6-in. stroke, with spring pressure attachment.

Baltimore

BALTIMORE, Dec. 20.

BIDS on revised plans will be asked soon by the Maryland Meter Works, 309 East Saratoga Street, Baltimore, for its proposed six-story plant, 80 x 200 ft., estimated to cost \$250,000 with equipment. Theodore W. Pietsch, American Building, is architect; Herman F. Doleman, 507 North Charles Street, is engineer. E. S. Dickey is general manager.

The Black & Decker Mfg. Co., East Pennsylvania Avenue, Baltimore, manufacturer of electric drills and other tools, is said to be arranging for a new bond issue of \$1,250,000, a portion of the fund to be used for expansion and general operations.

The Broad River Power Co., Columbia, S. C., has plans under advisement for a new steam-operated electric generating station on the Broad River, near Dravo, S. C., to cost more than \$300,000 with equipment.

The Holstein River Lumber Co., Clinchburg, Va., has authorized plans for rebuilding the portion of its mill in the vicinity of Saltville, Va., destroyed by fire Dec. 16, with loss estimated at \$100,000 including woodworking and power equipment. The plant gives employment to about 350 men.

The Bartlett Hayward Co., 200 Scott Street, Baltimore, manufacturer of gas plant equipment, plate products and other machinery, has awarded a general contract to Morrow Brothers, Fidelity Building, for two one-story additions, 50 x 56 ft. and 26 x 30 ft., respectively. Kubitz & Koenig, Emerson Tower Building, are architects.

Samuel T. Williams, 8 East Lexington Street, Baltimore, engineer, is considering the early purchase of a lathe, plain or screw-cutting, 8 to 12-in. swing, foot-power type or with countershaft.

The Waterproof Plywood Corporation, Emporia, Va., has plans for a new mill for the manufacture of plywood specialties, panels, etc., to be one story, 100 x 200 ft. The equipment installation is expected to cost close to \$20,000. R. W. Little is secretary.

The Richmond Air Junction Association, Richmond, Va., care of Henry Woodhouse, 280 Madison Avenue, New York, is reported to be planning the early construction of a new hydrogen gas plant at Richmond, with initial output of about 100,000 cu. ft. per day, to be used for aircraft service.

In connection with the recent merger of the Georgia Railway & Power Co., Georgia Railway & Electric Co., both of Atlanta, Ga.; the Rome Railway & Light Co., Rome, Ga., and other State power utilities into a new company to be known as the Georgia Power Co., with headquarters at Atlanta, plans are being arranged for a new bond issue of about \$45,000,000, a portion of the fund to complete the merger, and for proposed expansion and improvements. The new company will be affiliated with the Southeastern Power & Light Co., Birmingham.

Howard P. Morris, 118 Cherry Street, Jacksonville, Fla., and associates have concluded negotiations for the purchase

The Crane Market

THERE is a moderate volume of active inquiry for overhead and locomotive cranes, dealers in used locomotive cranes reporting an unusual number, considering the season. Purchases are being delayed and but little business is expected until next month. On a 25-ton locomotive crane for the city of New York, the low bid was submitted by the Orton Crane & Shovel Co., with the Browning Crane Co. next and the Brown Hoisting Machinery Co. high bidder. The New York Central Railroad is inquiring for a 10-ton, self-propelled, gasoline-driven derrick car for the maintenance of way department.

In the Baltimore district, Louis A. Tarr, Inc., Sharp and

Conway Streets, dealer in machinery, is inquiring for three used overhead cranes of 5, 10 and 15-ton capacities.

Among recent purchases are:

Carl A. Lefron, 171 Madison Avenue, New York, a 7-ton, 43-ft. 6-in. span, 2-motor, double I-beam, hand power crane for Clifton, N. J., from the Chisholm & Moore Mfg. Co.

Mechanical Mfg. Co., Chicago, a 15-ton, 3-motor overhead electric crane from the Shaw Electric Crane Co.

Armstrong Cork Co., New Brunswick, N. J., overhead system, including about 500 ft. of monorail and electric hoists, reported purchased from the Cleveland Tramrail Co.

of the municipal electric power plant at Folkston, Ga. Plans are under way for extensions and betterments. The new owners are also considering the establishment of an ice-manufacturing plant. A company will be formed to carry out the project.

The South Side Power Co., Roanoke, Va., will soon begin the erection of a hydroelectric generating plant on the Roanoke River, near Talley Falls, Va., with initial capacity of 20,000 hp. A transmission line will be constructed.

The Charles N. Walker Roofing Co., Atlanta, Ga., has removed to a new building at 141-43 Houston Street, where increased production and operating facilities will be provided. A portion of the structure will be given over to heating equipment. Charles N. Walker is head.

The Board of Education, Wilmington, Del., is said to be planning the installation of manual training equipment in the new high school to be erected at Thirteenth and Poplar Streets, to cost \$660,000, for which superstructure will soon begin.

The Hackley Morrison Co., 1708 Lewis Street, Richmond, Va., machinery dealer, has inquiries out for a steam-driven baling press for handling excelsior.

The Board of Water Commissioners, Macon, Ga., is asking bids until Jan. 11 for one centrifugal pumping unit, steam turbine-driven, with accessories, to be installed at the Riverside station, municipal waterworks, with rated capacity of 10,000,000 gal. per day. R. E. Findlay is secretary.

The Georgia Railway & Power Co., Atlanta, Ga., operated by the Georgia Power Co., has filed plans for a one-story service, repair and garage building for its motor bus system, to cost \$105,000 with equipment.

R. R. Childs, Rosenberg Building, Roanoke, Va., is taking bids on a contract for the manufacture of a patented locking device.

Pittsburgh

PITTSBURGH, Dec. 20.

DECEMBER has not fulfilled machine tool sales expectations of the early part of the month, but dealers continue to quote against a good number of inquiries and look forward hopefully to next year. Programs of steel companies for new plants, and extensions and betterments of existing ones are expected to bring some liberal orders for machine tools and other heavy equipment. Several railroads tributary to Pittsburgh, with possibly the exception of the Pittsburgh & Lake Erie, have asked for prices on a number of machines and there should be buying by the forging companies when there is a revival of activities in the automotive industries.

An expansion program is being arranged by the Pennzoll Co., Oil City, Pa., at its local oil refinery, to include the installation of new stills, electric power plant, pumping machinery and other equipment, as well as additional storage tanks. The entire project is reported to cost in excess of \$400,000. A controlling interest was recently acquired in the company by the South Penn Oil Co., 424 Sixth Avenue, Pittsburgh.

The Nonparell Mfg. Co., Cochran, Pa., manufacturer of agricultural implements and machinery, plans to rebuild the portion of its plant recently destroyed by fire, with loss estimated in excess of \$45,000 with equipment.

The Borough Council, Conneaut Lake, Crawford County, Pa., is asking bids until Jan. 7 for a wooden water tank of 20,000 gal. capacity, and accessories. Hill & Hill, Marine Bank Building, Erie, Pa., are engineers.

The Guyan Machine Shops, Logan, W. Va., machinery dealers, have been making inquiries for a punch and shear to handle plate up to 1/2-in. thick; also for a number of industrial motors, from 2 to 20 hp.; split steel pulleys, up to 36-in. diameter; several forge blowers, and a bake oven for large armatures, electrically operated or natural gas.

The Basic Products Co., Kenova, W. Va., is arranging for the early operation of a new plant for the manufacture of cement, for which several buildings are now in course of erection. It is reported to cost in excess of \$100,000 with machinery. The company has acquired properties in Kentucky and plans operations in that section in the future. A. T. Wood is general manager.

Fire, Dec. 15, destroyed a portion of the plant of the Pittsburgh Auto Spring Co., 5913 Center Avenue, Pittsburgh, with loss reported in excess of \$50,000 including equipment. W. S. Kimball and J. G. Hinds head the company.

The General Flat Glass Co., Mannington, W. Va., has awarded a general contract to the Webb Engineering Co., Oliver Building, Pittsburgh, for an addition to its plant, 38 x 400 ft., formerly the factory of the Mountain State Glass Co., recently acquired, to cost close to \$180,000, of which more than one-half will be expended for equipment. The works will be given over to the rolling of window and other flat glass specialties.

Philadelphia

PHILADELPHIA, Dec. 20.

The David Lupton's Sons Co., Allegheny Avenue and Tulip Street, Philadelphia, manufacturer of steel sash, etc., has acquired two two-story mills adjoining its plant for expansion. Each structure totals about 15,000 sq. ft. of floor space.

Officials of the William Cramp & Sons Ship & Engine Building Co., Richmond and Norris Streets, Philadelphia, have called a special meeting of stockholders Dec. 29 to arrange for the segregation of its marine and non-marine organizations. It is purposed to form a new company to be known as the I. P. Morris Corporation to take over and operate the present Morris division of the company, devoted to the exclusive production of hydroelectric power equipment. A holding company will be formed to operate the Morris Corporation and other subsidiaries, including the Federal Steel Foundry Co., Chester, Pa.; De La Vergne Machine Co., New York, and the Pelton Water Wheel Co., San Francisco. The Cramp organization will continue its ship-building activities as a separate unit. W. Averell Harriman heads the Cramp company.

Henry Levis & Co., Commercial Trust Building, Philadelphia, iron and steel merchants, have been making inquiries for a jaw crusher, about 36 x 42 in.; also for a 40-ton standard gage, saddle tank locomotive.

The Central Plumbing Supply Co., Twelfth and Spring Garden Streets, Philadelphia, A. Schmerling, president, has acquired about 4 acres at Sixth and Clearfield Streets, as a site for a new plant. The same interests operate the Central Lumber Co., and it is understood that a portion of the site will be given over to a mill for that organization.

The Board of Education, College Hill, Pa., contemplates the installation of manual training equipment in its proposed two-story and basement high school estimated to cost \$150,000, for which bids will soon be asked on a general contract. W. G. Eckles & Co., Lawrence Savings & Trust Building, New Castle, Pa., are architects.

The Pennsylvania Power & Light Co., Allentown, Pa., has work under way on its new steam-operated electric generating plant at Pine Grove, to cost in excess of \$2,000,000, and plans to have the unit ready for machinery installation

at an early date. Extensions will be made in transmission lines in this and other sections.

The Standard Iron & Steel Co., Harrisburg, Pa., has filed plans for a two-story storage and distributing plant, 40 x 100 ft., estimated to cost \$30,000 with equipment.

The Baltimore & Ohio Railroad Co., Baltimore, has plans for an addition to its engine house and shop facilities at Glenwood, Pa. L. P. Kimball is engineer.

The Pennsylvania Gas & Electric Corporation, York, Pa., is disposing of a preferred stock issue to total about \$950,000, a portion of the proceeds to be used for extensions and improvements. H. A. Clarke is vice-president.

The Alan Wood Iron & Steel Co., Conshohocken, Pa., is arranging for the early electrification of its East mill, and will replace all present steam equipment with electrically-operated machinery. Other improvements will also be made in equipment, to be carried out largely through the holiday season. The company has discontinued operations at its local J. Wood plant, and it is said that production will be concentrated in other units of the mill in the future.

The Board of Education, Darby, Pa., is said to be planning the installation of manual training equipment in its proposed three-story high school addition estimated to cost \$225,000, for which superstructure will soon be placed under way. Ritter & Shay, Packard Building, Fifteenth and Chestnut Streets, Philadelphia, are architects.

The York Haven Water & Power Co., York Haven, Pa., is disposing of a bond issue of \$50,000, a portion of the fund to be used for expansion. The company is affiliated with the Metropolitan Edison Co., Reading, Pa.

Cincinnati

CINCINNATI, Dec. 20.

ORDERS the past week have continued in fairly good volume, according to local machine tool builders. In some cases sales this month are running ahead of those in November, several leading manufacturers reporting increases of 20 to 25 per cent. Most of the business consists of orders for single tools from companies in the general industrial field. The Norfolk & Western is understood to be placing its tool requirements, and a local company will supply several radial drills specified on that carrier's recent list. While automobile makers are buying only small quantities of tools, bookings from that source are considered satisfactory for this time of year.

A manufacturer in the Detroit district has contracted with a local builder for six lathes. A Cincinnati machine tool company has received an order for four large lathes for shipment to central Europe. Sales the past week included a 48-in. x 23-ft. heavy engine lathe for C. S. Braun & Co., Alhambra, Cal.; a 1500-lb. single frame steam hammer for the American Forge Co., San Francisco; a Ransom grinder for the Tennessee Coal, Iron & Railroad Co.; a 4-ft. radial drill for a Williamsport, Md., company; a special grinder for a firm in Pennsylvania; an Acme rivet and track bolt machine for a Brooklyn manufacturer; a Marshalltown throatless shear for a Pacific Coast buyer; a 26-in. shaper for a Texas company; a 6-ft. radial drill for delivery to Philadelphia, and a grinder for the Frankfort, N. Y., shops of the New York Central.

Contract has been let by the Goldsmith Metal Lath Co., Cincinnati, to Max Penker & Son, local, for its one-story plant, 80 x 300 ft., to cost in excess of \$75,000 with equipment. G. W. Drach, Union Trust Building, is architect.

The Harris-Seybold-Potter Co., Dayton, Ohio, recently formed, will take over and consolidate the Seybold Machine Co., Dayton; Harris Automatic Press Co., Cleveland; and the Premier & Potter Printing Press Co., 33 West Forty-second Street, New York, all manufacturers of printing machinery and parts. The new company will continue the existing plants secured by the merger. A bond issue of \$2,000,000 is being sold, a portion of the fund to be used for the consolidation and for proposed expansion. A. F. Harris is vice-president and general manager.

The Prest-O-Lite Co., 30 East Forty-second Street, New York, manufacturer of acetylene welding apparatus, etc., has awarded a general contract to the Ferro Concrete Construction Co., Cincinnati, for the initial unit of its proposed plant at Oakley, to be one story, 80 x 220 ft., and to cost close to \$100,000. Other units will be constructed later, with total investment of about \$300,000.

The Illinois Central Railroad Co., Chicago, will soon begin the construction of a power house at its car shops at Paducah, Ky., to cost in excess of \$150,000 with equipment. An outside craneway will also be built.

The West Tennessee Fertilizer Co., Humboldt, Tenn., care of the Humboldt Chamber of Commerce, recently organized, is planning for the erection of a new plant, to cost close to \$50,000, with mixing and other machinery. E. L. Nelson is vice-president, and W. M. Stallings, secretary and treasurer.

The Martin Ice & Coal Co., Martin, Tenn., has plans for the construction of a new ice-manufacturing plant. The machinery will be electrically-operated.

The Board of Public Works, Memphis, Tenn., is reported to be planning the installation of pumping equipment in connection with proposed extensions and improvements in the municipal waterworks. A bond issue of \$500,000 is being sold, the fund to be used for the expansion.

The Louisville & Nashville Railroad Co., Louisville, is planning the early construction of a one-story addition to its car shops at Paris, Tenn., 75 x 120 ft., to cost \$75,000 with equipment. W. H. Courtenay is chief engineer.

The new plant of the Ironton Bernhart Boiler Co., Ironton, Ohio, is nearing completion and operations will begin early in January.

New England

BOSTON, Dec. 21.

SALES by local houses the past week were confined to a few individual machines, mostly used. Additional inquiry, including some for inventory purposes, is reported. The closing year, with the trade collectively, will be better than that of 1925, and the general outlook for business during the early months of 1927 is considered good.

Considerable interest is shown by local tool dealers in plans to change the Massachusetts laws regarding taxation of industrial machinery. Under the present system industrial machinery is taxed on a basis of local valuations and rates. The proposed plan is for a uniform rate of \$5 to \$10 per thousand on all machinery used in industrial plants. If the plan is carried out it should give impetus to the textile industry. In past years the textile industries were liberal buyers of machine tools, but have not bought much the past year or two. Machine tool dealers feel that if textile mill tax burdens are lightened, they probably would buy more equipment.

The Dahlquist Mfg. Co., 26 West Third Street, South Boston, coppersmith, has awarded contract for the erection of a two-story and basement addition. The Warren Engineering Corporation, 50 Terminal Wharf, Charlestown, Boston, is the engineer.

The Norfolk Japanneries, Inc., Neponsit Avenue, Canton, Mass., has placed contract for the construction of a plant. John P. De Wolf, 45 Bromfield Street, Boston, is the engineer.

Foundations are being laid for a one-story fabricating shop addition for the Bethlehem Shipbuilding Corporation, Inc., 97 Howard Street, Quincy, Mass. Plans are private.

Thomas J. Hill Peirce, City Hall, Providence, R. I., is preparing plans for a two-story, 176 x 285 ft. and 176 x 284 ft. public school on Elmgrove Avenue and Session Street to cost \$1,200,000. It will contain six shops. Joseph E. Gainer is mayor.

Henry M. Van Deusen has purchased the business of the Planet Mfg. Co., Westfield, Mass., wooden and metal ware, but not the real estate or its new electric dish washer. The new owner has leased the property and will start operations at once.

H. C. Morton, 132 Arch Street, New Britain, Conn., architect, has plans for a new two-story automobile service, repair and garage building, 65 x 140 ft., to cost approximately \$100,000 with equipment.

The Bridgeport Bed Spring Co., Bridgeport, Conn., has awarded a general contract to the E. F. Construction Co., Wells Street, for a one-story addition to cost about \$20,000.

The Beacon Oil Co., 111 Devonshire Street, Boston, will soon begin the construction of a new storage and distributing plant at South Norwalk, Conn., to cost close to \$60,000 with equipment. A repair shop will also be built and service and garage building for company motor trucks.

The Montaup Electric Co., Fall River, Mass., has plans for extensions and improvements in its steam-operated electric generating station at Somerset, Mass., to include the installation of a 35,000-kw. turbo-generator, condensers, boilers and other equipment, to cost in excess of \$2,000,000.

The W. A. Ives Mfg. Co., Wallingford, Conn., manufacturer of screw drivers, bits and other carpenter tools, has

leased a portion of the factory of the Miller Brothers Cutlery Co., Meriden, Conn., now in receivership, and will occupy for a new plant. The extension will provide, in part, for a portion of the Ives company plant recently destroyed by fire.

Detroit

DETROIT, Dec. 20.

PLANS are being arranged by the Regent Stove Co., Wyandotte, Mich., for additions and improvements, including a new one-story extension for iron enameling. The entire project is estimated to cost about \$100,000 with machinery.

The Richards-Oakland Motor Co., Detroit, has awarded a general contract to the Everett Winters Co., 1651 East Grand Boulevard, for a five-story and basement service, repair and garage building, 150 x 190 ft., to cost about \$150,000 with equipment. Albert Kahn, Inc., Marquette Building, is architect. G. A. Richards is president.

The Olds Motor Works, Lansing, Mich., is carrying out an expansion and improvement program at its plant to develop a daily production of about 500 automobiles, including the erection of additional buildings and installation of new machinery to cost in excess of \$250,000. I. J. Reuter is president and general manager.

E. I. du Pont de Nemours & Co., Wilmington, Del., has plans for the construction of five new one-story units at its Duco manufacturing works at Flint, Mich. The expansion will cost about \$425,000 and is scheduled for completion in June. C. R. E. Merkle is plant manager.

The Goldsmith-Ely Co., 148 South Jackson Street, Jackson, Mich., operating an electric storage battery works, has asked bids on a general contract for a new one-story and basement plant, to cost \$20,000 with equipment. H. R. Graf, Rogers Building, is architect.

The Hutto Engineering Co., Inc., Detroit, manufacturer of cylinder grinding machines, cylinder grinders, etc., is disposing of a stock issue to total about \$715,000, a portion of the fund to be used for expansion. M. C. Hutto is president.

The Falcon Motors Corporation, Detroit, has been organized to manufacture the new six-cylinder Falcon-Knight automobile, designed to sell for about \$1,000. Arrangements for quantity production will be completed soon. John A. Nichols, formerly vice-president of Dodge Brothers, Inc., is president of the new organization; D. R. Wilson, vice-president and general manager of the Wilson Foundry & Machine Co., Pontiac, Mich., will be a director. Headquarters have been established in the Majestic Building, Detroit.

Dodge Brothers, Inc., Detroit, has awarded a general contract to the Fort Pitt Bridge Co., House Building, Pittsburgh, for a one-story machine shop, 200 x 1630 ft., to cost in excess of \$500,000 with equipment.

The Kalamazoo Stove Co., Kalamazoo, Mich., will proceed with the erection of a one-story enameling addition, for which a general contract recently was let to R. D. Boyer, Kalamazoo. It will cost close to \$50,000 with equipment. A. L. Blakeslee is general manager.

The Lakey Foundry & Machine Co., Muskegon, Mich., is planning to rebuild the portion of its plant recently damaged by fire with loss reported at \$25,000 including equipment.

Indiana

INDIANAPOLIS, Dec. 20.

E. W. AND W. R. BASSICK, Bridgeport, Conn., formerly operating the Bassick Mfg. Co. and the Bassick Alomite Co., have completed negotiations for the purchase of the Service Motors, Inc., Wabash, Ind., manufacturer of motor trucks. The acquiring interests control the Commerce Motor Truck Co., Ypsilanti, Mich., and propose the early removal of this plant to Wabash, where facilities will be provided for considerable increase in output. A department will also be established for the manufacture of the Relay axle drive for motor trucks.

The Corcoran Mfg. Co., 217 West Tenth Street, Indianapolis, manufacturer of toys, has plans for a new factory branch at Washington, Ind., to cost about \$25,000. Lewis Corcoran is president.

The Wayne Tank & Pump Co., Canal Street, Fort Wayne, Ind., manufacturer of gasoline pumping equipment, has awarded a general contract to the Indiana Engineering Construction Co., Central Building, for a one-story addition, 40 x 300 ft., to cost in excess of \$85,000 with equipment.

Fire, Dec. 12, destroyed a portion of the equipment and stores department of the Indiana Limestone Co., Oolitic, near Bedford, Ind., with loss estimated at \$100,000, including machinery and supplies. It is planned to rebuild.

The Standard Oil Co. of Indiana, 910 South Michigan

Avenue, Chicago, is planning the early construction of a new two-story steam-operated electric generating plant, 170 x 230 ft., at its refinery at Whiting, Ind., to cost in excess of \$500,000 with turbo-generator and auxiliary equipment. R. E. Humphrey is construction engineer for the company.

The Board of School Trustees, Evansville, Ind., is completing plans for a proposed vocational building at the central high school, to cost \$150,000 with equipment. A portion of the structure will be used for a gymnasium. Frank J. Schlotter is architect.

The Shrader Battery Co., New Albany, Ind., has plans for the first unit of a new one-story plant for construction and repair work, to cost about \$24,000 with equipment.

The Amco Rebound Check Corporation, New Castle, Ind., has been organized to manufacture automobile shock absorbers. The company originally was located in Indianapolis, and for the present will assemble shock absorbers. Plans are under way, however, for installing machinery for the manufacture of all of the parts required in the product. Harry Burris is president.

The Goldsmith Iron & Supply Co., Indianapolis, has moved from 128 East Washington Street to 415 Meyer-Kiser Bank Building.

The Phil Easterday Co., Terre Haute, Ind., is preparing to manufacture machines for making concrete pipe.

The Knox Engineering Co., Columbia City, Ind., manufacturer of punching and shearing machinery, has been sold to C. F. Heinss, Cincinnati, and his two sons. The name of the company will be changed to the Heinss Engineering Co. Albert L. Heinss will be plant manager.

Cleveland

CLEVELAND, Dec. 20.

MACHINE tool sales were somewhat better the past week than earlier in the month and the December volume is expected to be about as good as that of November. While some prospective business is being carried into next month, other buyers have closed for machinery for which inquiries have been dragging along for some time. A few new inquiries have come from the Detroit automotive industry for special production machinery, and some other manufacturers are figuring on machines to reduce the cost of certain operations. Railroads in this territory have purchased very little equipment this year, but a better demand is looked for from that source in 1927. Orders placed during the week include an 800-lb. steam hammer purchased by the Cleveland Stone Co.

Lathe prices show an upward tendency. One or two manufacturers have advanced prices 5 to 10 per cent and some others are expected to mark their prices up Jan. 1.

The Cleveland Atomized Fuel Co., Cleveland, has acquired the plant formerly occupied by the Ohio Briquetting Co., Literary Road and West Third Street, and is installing equipment for the manufacture of pulverized coal for industrial and domestic uses, and the manufacture of burners for use with its fuel.

The Colonial Iron Works Co., Cleveland, will erect a new plant on St. Clair Avenue near 176th Street.

The White Sewing Machine Co., Cleveland, has placed contract with the Sam W. Emerson Co. for rebuilding the portion of its plant recently burned.

The plant of the Standard Car Wheel Co., Cleveland, recently purchased by the Griffin Wheel Co., Chicago, was badly damaged by fire Dec. 15.

The Luehrs Co., 115 St. Clair Avenue, Cleveland, manufacturer of special machinery, is building a one-story plant, 120 x 150 ft., at Canton, Ohio, and will move to that city as soon as the structure is completed.

The Temco Electric Motor Co., Leipsic, Ohio, is considering rebuilding the portion of its plant recently destroyed by fire with loss in excess of \$150,000 including equipment. John Walters is one of the heads of the company.

The capital stock of the Byers Machine Co., Ravenna, Ohio, has been purchased by a syndicate of Cleveland and Detroit bankers, at the head of which is Glen P. Cowan, Detroit. No change will be made in the personnel of the operating and manufacturing organization. The new owners plan to increase manufacturing facilities and extend the present line of products. Bucket-handling revolving cranes and other products are manufactured.

The Gogan Machine & Foundry Co., Inc., 1630 Collamer Avenue, Cleveland, is erecting a new factory at 1440 East Fifty-fifth Street, which will provide larger and better facilities for the manufacture of its shaft heat-treating machines, automobile spring, bumpers, bracket and rail-road plate and coil spring forming and quenching machine. The company also makes a complete line of high-pressure pump-driven bulldozers and bending machines.

Milwaukee

MILWAUKEE, Dec. 20.

HOLIDAY dullness is settling over the machine-tool market and little activity is expected prior to the resumption of business in the new year. Production, however, continues upon a fairly satisfactory scale, although pressure for deliveries is not nearly so strong as it was a year ago at this time. The letdown in automobile production has caused a sharp reduction in foundry and machine shop output, the parts, materials and accessories industry constituting a substantial part of local industrial activity. The condition is only temporary, however, and an upswing is expected within a few weeks.

The Iron Products Corporation, La Crosse, Wis., has purchased the entire plant and business of the James Foundry Co., same city, from the estate of Alfred James, who died recently. The business will be continued as at present, with the transfer of the brass foundry operation from the Iron Products works to gain increased capacity. The acquisition of the James foundry gives the Iron Products a complete organization for handling all kinds of iron, steel and machinery work. It has a substantial forging plant, an iron foundry, brass foundry, pattern shops and an extensive machine shop. Since organization in 1920 it has purchased the La Crosse Gas Engine Works, the La Crosse Well Drill Works, the Gund Mfg. Co., La Crosse, and the anchor business of the Crouse-Hinds Co., Syracuse, N. Y.

The Wisconsin State Highway Commission, Madison, is erecting a shop with 10,000 sq. ft. of floor space for the manufacture of its requirements of metal and wood highway signs, markers, signals, etc. John T. Donaghey is State highway commissioner.

The Milwaukee Tank Works, 1615 Fratney Street, Milwaukee, has increased its capitalization from \$100,000 to \$200,000 to facilitate the growth of its business, especially in gasoline and oil pumps for garages and filling stations. Extension of the plant is contemplated but plans have not been completed. E. A. Bienenstok is president.

The Beloit Iron & Metal Co., scrap iron, metal and machinery, Beloit, Wis., has recently purchased an Orton locomotive crane, and is in the market for a magnet for handling scrap iron. It has also purchased additional property and equipment to enlarge its yards.

St. Louis

ST. LOUIS, Dec. 20.

ATRACT of 15 acres at Toledo, Ohio, has been acquired by the Roxana Petroleum Corporation, Arcade Building, St. Louis, as site for a new oil storage and distributing plant, with facilities for handling 8,000,000 gal. of oil. The project will include a power house, machine shop and pumping plants, and is estimated to cost in excess of \$1,750,000 with equipment. Frank L. Sullivan is district manager at Toledo.

Buckley & Van Brunt, Lloyd Building, Kansas City, Mo., architects, have plans under way for a new two-story plant, 100 x 130 ft., for the manufacture of waxed and other processed papers. The name of the company is temporarily withheld. The plant will cost close to \$80,000.

The St. Louis-San Francisco Railway, St. Louis, is planning for the removal of its locomotive and car terminal shops at Sapulpa, Okla., to Tulsa, Okla., where the capacity will be increased.

The City Council, Anadarko, Okla., is planning extensions and improvements in the municipal electric light and power house, including the installation of a new 500-hp. engine and auxiliary equipment. A fund of \$40,000 has been authorized for the work.

Peers & McGlone, Pine Bluff, Ark., manufacturers of automobile rims and spokes, used largely for Ford automobiles, plan the early rebuilding of the portion of their plant destroyed by fire Dec. 7, with loss reported at \$30,000 including machinery.

The Crane Co., Chicago, is said to be considering the construction of a one-story addition to its factory and distrib-

uting branch at Wichita, Kan., to cost \$60,000. It is expected to begin work in the spring. W. J. Clarke is company architect.

The Rock Asphalt Co., Wichita, Kan., George H. Bradford, head, is said to have tentative plans under way for a new asphalt manufacturing plant, to cost about \$50,000 with equipment.

The Standard Ice Co., 921 Barber Street, Little Rock, Ark., has plans for a one-story plant to cost about \$45,000, of which approximately one-half will be expended for equipment. G. H. Kendrick is secretary.

The City Council, Crete, Neb., is arranging a fund of about \$80,000 for a proposed municipal electric light and power house, for which plans will be prepared soon. C. E. Beals is city clerk.

Oliver Carlot, 205 Reliance Building, Kansas City, Mo., is completing plans for a one-story and basement electric equipment and repair shop, 50 x 125 ft., to cost \$23,000 with machinery. Eugene Snyder, Continental Building, is architect.

The Holmboe Co., 422 West Second Street, Oklahoma City, Okla., has taken out a permit for a new one-story shop for machinery construction and repair, 70 x 100 ft., to cost about \$21,000 with equipment.

The Allen Ice & Water Service Corporation, Karbach Building, Omaha, Neb., has plans for a one-story ice-manufacturing plant, 70 x 125 ft., to cost about \$80,000 with machinery. J. P. Guth, Paxton Building, is architect.

Gulf States

BIRMINGHAM, Dec. 20.

THE Day Mfg. Co., Sherman, Tex., manufacturer of paper containers, is planning the installation of additional equipment, including power cutter, stripping machine, corner cutter, slitter and rewinder and covering machine. Luther A. Day is head.

The A. & J. Mfg. Co., Gadsden, Ala., manufacturer of stoves and fittings, has plans for two additions, each one story, 50 x 130 ft. and 80 x 100 ft. The last noted will be equipped for a foundry. The expansion is reported to cost about \$50,000 with equipment.

The American Fertilizer & Chemical Works, Georgetown, Tex., is planning for the early installation of equipment at its plant, including rock crushers, pulverizers, conveying machinery, grinding equipment, air compressors and other power equipment. Thomas F. Hawkins is president.

The Brown Paper Mill Co., Monroe, La., has begun work on the second unit of its plant for the production of kraft papers. It is estimated to cost in excess of \$1,200,000 with equipment. George F. Hardy, 309 Broadway, New York, is engineer.

The Florida East Coast Utilities, Inc., Johnson & Moffatt, Building, Miami, Fla., has asked bids on a general contract for a proposed ice-manufacturing, refrigerating and cold storage plant, to cost more than \$1,000,000 with machinery. Ophuls & Hill, Inc., 112 West Forty-second Street, New York, is engineer.

Ovens, power equipment, conveying and other machinery will be installed in the two-story addition to be constructed at the plant of the American Bakeries Co., South Sixth Avenue, Birmingham, 50 x 125 ft., estimated to cost \$115,000. E. F. Benton is assistant manager.

The Dade County Board of Public Instruction, Central School Building, 69 N. E. Third Street, Miami, Fla., plans the installation of manual training equipment in the proposed new local senior high school, estimated to cost \$1,000,000, for which bids are being asked on a general contract until Jan. 10. Kiehnel & Elliott, Seybold Building, are architects.

George L. Allen, 1303 Third Street, Alexandria, La., is desirous of getting in touch with manufacturers of bicycle parts, with view to purchase.

The Town Council, Winnfield, La., is considering the installation of pumping equipment in connection with proposed extensions in the municipal waterworks and new sewage system. A fund of \$150,000 is being arranged for the entire project. Charles D. Evans, Levy Building, Shreveport, La., is consulting engineer.

The Magnolia Petroleum Co., Dallas, Tex., will soon begin the construction of a new pipe line from the Panhandle oil-fields, vicinity of Amarillo, Tex., to a connection with its trunk lines in Eastland County, to cost in excess of \$400,000.

The Urania Lumber Co., Ltd., Urania, La., is planning the immediate construction of a new mill for the production of hardwood flooring, etc. The equipment installation is expected to cost about \$50,000. Q. T. Hardtner is general manager.

Pacific Coast

SAN FRANCISCO, Dec. 15.

PLANs are being completed by the Goodyear Tire & Rubber Co., Akron, Ohio, for a five-story addition, 100 x 200 ft., to its mill at Los Angeles, estimated to cost \$260,000 with equipment. L. A. Whitcomb is engineer in charge at the local plant.

The American Can Co., Mills Building, San Francisco, is said to have plans for new works at San Jose, Cal., estimated to cost \$200,000 with machinery. Headquarters are at 120 Broadway, New York.

The Modesto Ice Delivery Co., Modesto, Cal., will erect a new one-story plant with capacity of about 100 tons per day, estimated to cost \$100,000 with equipment. J. R. Ward is manager.

The Pico Water District, Whittier, Cal., is considering the installation of pumping equipment in connection with proposed extensions, estimated to cost \$125,000; a new elevated steel tank of 100,000 gal. capacity, will be installed.

The Marbelite Corporation, 3248 Long Beach Avenue, Los Angeles, manufacturer of cast concrete lighting standards, has acquired about 10 acres at St. Louis, fronting on the Mississippi River, and contemplates the early construction of a new Eastern branch plant, estimated to cost \$250,000. It will give employment to more than 500 operatives.

Sears, Roebuck & Co., Chicago, mail-order house, has acquired about 8½ acres at Los Angeles, as a site for a new multi-story branch storage and distributing plant, to cost \$3,500,000 with equipment. Bids will be asked soon on a general contract. George C. Nimmons & Co., Chicago, are architects; Martin C. Schwab, Chicago, is engineer, in charge of mechanical equipment.

The Associated Oil Co., Associated Oil Building, San Francisco, will proceed with the erection of a one-story repair shop at Emeryville, Cal., for company motor trucks and cars, to cost \$100,000 with equipment.

The Turlock Irrigation District, Turlock, Cal., has approved a proposed bond issue of \$600,000, of which \$514,000 will be used for the installation of two new generating units at the Don Pedro hydroelectric generating plant, and \$86,000 for extensions in the substation at Turlock, including the installation of additional equipment.

The Pacific Coast branches of the Lidgerwood Mfg. Co. and the Puget Sound Iron & Steel Works, Tacoma, Wash., have been consolidated, and a new corporation, the Lidgerwood Pacific Co., has been formed. The Puget Sound Iron & Steel Works for several years has been manufacturing logging machinery for the Lidgerwood company. The new organization will manufacture logging engines, do general machine work, and operate a fabricating shop and a steel castings plant. A new electric steel furnace is being installed. The main office will be at Tacoma, Wash., and additions will be made to former Lidgerwood warehouses at Seattle, Portland, Ore., San Francisco and New York. Agencies at Los Angeles and at Vancouver, B. C., will be continued.

The Judson Mfg. Co., San Francisco, has been appointed local distributor for the Jones & Laughlin Junior beam. The Judson company operates a fabricating shop, open-hearth furnaces and bar mills at Emeryville, Cal.

The Continental Can Co. has completed negotiations for the purchase of the properties of the Los Angeles Can Co., at 303 San Fernando Road, Los Angeles. The annual production of the latter company has been approximately 50,000,000 cans a year, and it is understood that the new owners will install additional equipment for greater production.

The Yuba Mfg. Co., 433 California Street, San Francisco, announces its location since Dec. 1 at 504 Balfour Building, 351 California Street, San Francisco.

Canada

TORONTO, Dec. 20.

ALTHOUGH machine tool sales have fallen off somewhat the past few weeks, business as a whole is decidedly better than at the corresponding period last year and dealers report a satisfactory volume of orders. Much of the current demand is for single tools, but inquiries calling for fairly large lists are making their appearance.

The machinery market is considered to be on a sound footing with prospects for an increased demand early in the new year. Small tools are also more active.

The Telluride Co., Kirkland Lake, Ont., plans the construction of a mill in connection with its mining property there.

It is officially reported that the Blue Quartz Gold Mines, Matheson, Ont., will build a mill there, on which construction will be started before next May.

Arrangements practically have been completed whereby the National Steel Castings, Ltd., a new company, will establish a plant at Campbellford, Ont., to manufacture electric steel and alloy castings.

The Canadian International Paper Co., Ltd., Notre Dame Street, Three Rivers, Que., will build pulp and paper mills at Dalhousie, N. B., at a cost of \$10,000,000.

The Canadian Top & Body Co., Tilbury, Ont., will build an addition to plant No. 2 to cost \$12,000.

The Rlordon Plating Works, Hamilton, Ont., manufacturer of automobile bumpers, etc., has purchased the plant of the Smithville Metal Industries, Smithville, Ont., consisting of a main building, 50 x 100 ft., and a smaller structure, 24 x 24 ft. New machinery has been installed.

The Frost Steel & Wire Co., Hamilton, Ont., has purchased the buildings and property of the Petrie Co., and proposes to make improvements to cope with the increasing demand for its products.

McCallum, Smith & Co., Montreal, operators of the Economic Railway Appliance Co., have purchased the plant and equipment of the British-American Nickel Co., Deschenes, Que., which has been idle for several years. No definite statement has been made regarding the use to which the plant will be put. The new owners have also purchased the smelter and mine plant of the British-American Nickel Co., Nickelton, Ont.

The Sangamo Electric Co. of Canada, Ltd., 183-185 George Street, Toronto, advises that its plant has not been destroyed by fire, as recently stated, and that contracts amounting to approximately \$35,000, which have been awarded, are for an extension which the company is erecting.

Foreign

THE Russian-American Compressed Gas Co., recently formed as a subsidiary of the International Oxygen Co., 796 Frelinghuysen Avenue, Newark, N. J., with capital of \$500,000, is completing plans for the early construction of an industrial oxygen, acetylene and welding plant at Baku, Russia, to cost in excess of \$100,000 with equipment. The International company, through its treasurer and general manager, A. A. Heller, has secured concessions for 11 such plants in different parts of Russia, and through the Russian Metal Syndicate, the Soviet Government will be interested in the enterprise.

The New Zealand Railways, Auckland, New Zealand, has plans for the construction of new locomotive and car shops at Otahuhu, about 9 miles from Auckland, estimated to require more than 24 months for ultimate completion, with cost placed at \$2,300,000 including tools and machinery. The present shops at Auckland will be removed to the new location. Information at the office of the Bureau of Foreign and Domestic Commerce, Washington, under reserved information New Zealand No. 228028; also at the office of the American Consulate, Auckland, Walter F. Boyle, consul.

The Berlin City Electric Co., Berlin, Germany, is disposing of a bond issue of \$20,000,000 in the United States, a portion of the fund to be used for extensions and betterments. The company has work under way on two units of a three-unit

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electric generating plant at Rummelsburg, to provide a capacity of 160,000 kw. It is expected to proceed with the third unit, with additional output of about 80,000 kw., during the coming year.

The Goodyear Tire & Rubber Co., Akron, Ohio, has acquired about 20 acres near Sydney, Australia, and plans the construction of a new mill with initial equipment for an output of about 1000 tires and tubes per day. It is proposed to have the plant ready for service by the end of 1927. It is reported to cost in excess of \$500,000 with machinery.

The Swedish Chamber of Commerce in the United States, 25 Beaver Street, New York, has received an inquiry (No. 379) from a company in Sweden desiring to purchase screw drivers and other carpenters' tools, can openers, curling irons, kitchen knives, oil cans and other kindred metal goods; also an inquiry (No. 389), from a company in Sweden in the market for tin plate for manufacturing cans.

NEW TRADE PUBLICATIONS

Grinding Wheels.—Abrasive Co., Philadelphia. Leaflet announcing the addition of S-Elastic ("Bakelite" Bonded) grinding wheels to the company's abrasive grinding wheel line.

Special Meters.—Connersville Blower Co., Connersville, Ind. Bulletin 43, describing the company's tandem meter for measurements where an extreme range must be met, the P. V. T. T. reversing meter, the demand meter and the long distance recorder.

Open Side Planers.—Cleveland Planer Co., 3146 Superior Avenue, Northeast, Cleveland. Leaflet devoted to a brief description of the company's open side planer, furnished in sizes from 26 to 84 in.

Crushers.—Kennedy-Van Saun Mfg. & Engineering Corporation, 50 Church Street, New York. Leaflet describing the company's gyratory crusher for both primary and secondary operations with capacities from 15 to 2500 tons per hour.

Blue Printing Machinery.—C. F. Pease Co., 813-821 North Franklin Street, Chicago. Catalog M-26, generously illustrated and providing a concise description of the company's blue printing machines and accessories. The process of automatically printing, washing and drying by one continuous operation in an electrically operated machine is emphasized.

Small Tools.—McCrosky Tool Corporation, Meadville, Pa. Catalog No. 10, 64 pages, handsomely bound and illustrated, adequately describing the company's products. Included are various types of reamers, chucks and collets, turrets for lathes and other small tools.

Roll Lathes.—Mesta Machine Co., Pittsburgh. Bulletin F, describing in detail with illustrations, diagrams and specifications, the company's lathes for rolling mill work. The machines are designed for turning rolls of any type for 18-in. trains and smaller up to the largest and heaviest rolls used in present mill practice.

Galvanized Iron.—American Rolling Mill Co., Middletown, Ohio. "Iron Economy in Industry," an illustrated pamphlet showing the use of the company's product as a building product for various industries. Tables showing the approximate weight and thickness of the different gages of roofing sheets and sheet steel are included.

Portable Elevators.—Revolator Co., 336 Garfield Avenue, Jersey City. Leaflet describing the electric portable elevator with worm gear drive made by the New York Revolving Portable Elevator Co. Revolvable models can be furnished in capacities up to 3000 lb. and the non-revolvable in capacities up to 5000 lb.

Special Steel.—Jones & Laughlin Steel Corporation, Pittsburgh. A 48-page booklet details the characteristics and applications of "Jalcas" steel put on the market early this year. Physical data are given of $\frac{1}{4}$ -in rounds of hot-rolled and cold-drawn steel in comparison with S.A.E. standard grade series 1112, 1120 and 1020 steels. Physical properties and heat treatments of Jalcas steel of varying carbon content are charted while case carburizing, carburizing treatments, forging and typical uses, many of which are illustrated, are described.

Gasoline Shovels.—Harnischfeger Sales Corporation, Milwaukee. Bulletin 61-X, of 56 pages and 96 illustrations, devoted to gasoline driven excavators. Besides details of construction described in full, the application of excavators to various fields of work are shown, together with auxiliary equipment, such as draglines, cranes, pile drivers, trench hoes, etc.

THE LAST WORD

(Contributed by the Reader Service Department of the Iron Age Publishing Co.)

YOU may never have prisoners to train, but if you do, it will be handy to know that there is danger in teaching highly specialized work. Rapidly changing methods of manufacture may prevent the convict from using his knowledge when he is released, so it is better that the training be general, according to an address before the American Prison Association's convention.



"When responsibility is placed upon workingmen they tend to become conservative, often to a greater degree than the management." So said Cleveland Dodge, of the Phelps-Dodge Corporation, before the American Mining Congress.

The career of many a promising communist has been ruined by having property left to him.

OF the young couples married in the first six months of 1926, 61.59 per cent started off housekeeping on the budget system, our demon statistician informs us. Three months later 8 per cent were still hewing to the budget. They were saved by the worse half putting his foot down firmly when the better half wanted to borrow from the "Medical and Dental Fund" to buy a new fur coat.

But in business the budget system is gaining in popularity. It is not at all improbable that the next five years will see the budget adopted generally by well-conducted organizations as the thing to do to keep abreast of the times.

Resolve to budget your business in 1927.



TIME was when labor chiefs fulminated periodically about the influx of foreign workers menacing the American standard of living. But immigration is one of the things crossed off the Federation's "view with alarm" list. In the three months ended Sept. 30 the number of immigrants skilled in the metal trades had dwindled down to a mere 344 per month.

Is this one of the reasons for the increasing interest in apprentice-training?



A CERTAIN government department makes it a point to check-up on its own forecasting, and finds it is correct about half the time. Not many forecasters have so good a record. Of course, you could get about the same results with less trouble by the time-honored method of flipping a coin, but it is not so impressive.

"Oil," laconically answered C. D. C., of Long Beach, Cal., when we asked him in what business he is engaged. "I follow the iron and steel business as an economic barometer. I consider your publication the best in its field."

We wish Mr. C. D. C. an especially happy and prosperous New Year.

A. H. D.

